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Practice & Revision Kit

Paper F9 Financial Management

For exams in September 2016, December 2016, March 2017 and June 2017

Valid for both
paper and
computer based
exams



Content reviewed by
ACCA's examining team



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PAPER F9

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FINANCIAL MANAGEMENT

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In this Practice & Revision Kit, which has been reviewed by the **ACCA examination team**, we:

- Discuss the **best strategies** for revising and taking your ACCA exams
- Ensure you are well **prepared** for your exam
- Provide you with **lots of great guidance** on tackling questions
- Provide you with **three** mock exams
- Provide **ACCA exam answers** as well as our own for selected questions

Our **Passcards** also support this paper.

**FOR EXAMS IN SEPTEMBER 2016, DECEMBER 2016, MARCH 2017
AND JUNE 2017**

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About this Practice & Revision Kit

ACCA will start to transfer F5–F9 to computer-based examination (CBE), beginning with a pilot in limited markets in September 2016. Students will initially have the choice of CBE or paper exams and as a result, changes will be made to BPP's learning materials to ensure that we fully support students through this transition.

This Practice & Revision Kit is valid for exams from the September 2016 sitting through to the June 2017 sitting and in this Practice & Revision Kit you will find questions in both multiple choice question (MCQ) and objective testing question (OTQ) format. OTQs include a wider variety of questions types including MCQ as well as number entry, multiple response and drag and drop. More information on these question types will be available on the ACCA website.

OTQs will only appear in computer-based exams but these questions will still provide valuable practice for all students whichever version of the exam is taken. These are clearly marked on the contents page as either CBE style OTQ bank or CBE style OT case.

In addition please note that the specimen paper-based exam paper has been included as Mock Exam 3 in this Practice & Revision Kit. The questions in Sections A and B are MCQ only whereas in the computer-based exam these sections will contain OTQs.

More information on the exam formats and can be found on page xviii.

At the time of going to print, ACCA had not yet announced the proposed duration of the computer-based exam and so all timings given throughout this Practice & Revision Kit are based on the paper-based exam which is 3 hours and 15 minutes long. Time management is a key skill for success in this exam and so we recommend you use these indicative timings when attempting questions.

ACCA are recommending that all students consult the ACCA website on a regular basis for updates on the launch of the new CBEs.

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Question index

The headings in this checklist/index indicate the main topics of questions, but questions often cover several different topics.

Questions set under the old syllabus and exam format are included because their style and content are similar to those which appear in the F9 exam. The questions have been amended to reflect the current exam format.

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			Question	Answer
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26-30 MCQ bank – Financial management environment	10	20	9	76
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36-40 CBE style OTQ bank – Financial management environment	10	20	10	77
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46-55 CBE style OTQ bank – Managing working capital	20	39	13	78
56-60 CBE style OTQ bank – Working capital finance	10	20	14	80
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66-70 CBE style OT case Gorwa Co (12/08, amended)	10	20	17	81
71-75 CBE style OT case Cat Co	10	20	18	82
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77 ZSE Co (6/10, amended)	20	39	20	85
78 WQZ Co (12/10, amended)	20	39	20	87
79 Bold Co (12/11, amended)	20	39	21	90

80 Wobnig Co (6/12, amended)	20	39	22	92
81 KXP Co (12/12, amended)	20	39	23	94
82 CSZ Co (6/14, amended)	20	39	24	97
83 Flit Co (12/14, amended)	20	39	24	99
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140-144 CBE style OT case BRT Co (6/11, amended)	10	20	37	113
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146 Project E (6/14, amended)	20	39	39	116
147 AGD Co (FMC, 12/05, amended)	20	39	40	118
148 Basril Co (FMC, 12/03, amended)	20	39	40	121
149 Filtrex Co	20	39	41	122
150 Warden Co (12/11, amended)	20	39	41	124
151 BQK Co (12/12, amended)	20	39	42	126
152 Uftin Co (12/14, amended)	20	39	43	128
153 Hraxin Co (6/15, amended)	20	39	44	131

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159-163 MCQ bank – Dividend policy	10	20	46	134
164-173 MCQ bank – Gearing and capital structure	20	39	47	135
174 -183 CBE style OTQ bank – The cost of capital	20	39	49	136
184- 193 CBE style OTQ bank – Capital structure	20	39	51	138

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194-198 CBE style OT case IML Co	10	20	52	140
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200 YGV Co (6/10, amended)	20	39	54	143
201 NN Co (12/10, amended)	20	39	55	146
202 AQR Co (6/11, amended)	20	39	56	148
203 BKB Co (12/12, amended)	20	39	56	150
204 Fence Co (6/14, amended)	20	39	57	153
205 Tinep Co (12/14, amended)	20	39	57	155
206 Grenarp Co (6/15, amended)	20	39	58	157

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Mock exam 1

Mock exam 2 (CBE style)

Mock exam 3 (Specimen exam)

Topic index

Listed below are the key Paper F9 syllabus topics and the numbers of the questions in this Kit covering those topics.

If you need to concentrate your practice and revision on certain topics or if you want to attempt all available questions that refer to a particular subject, you will find this index useful.

Syllabus topic	Question numbers
Asset replacement decisions	165, 127, 128, 145, 149
Business valuation	207-216, 222-225, 227-228, 232-236
Capital rationing	123, 124, 125, 129, 145, 148
Capital structure	184-193
Cash management	56, 57, 58, 77, 81c, 83
Cash operating cycle	41, 42, 79, 82a
Cost of capital	174-183, 194, 196-198, 200, 201
Dividend policy	159-163, 201c, 205c
Environment/economics	21-23, 25, 31-40, 84c, 151b
Financial intermediaries	26, 76c
Financial management	2, 6, 15
Foreign currency risk	237-246, 252-256, 257-261
Gearing	164-168, 199d, 200b
Interest rate risk	247-251
Inventory management	43, 47, 48, 53, 55, 62, 63, 78a, 81b
IRR	98, 100, 101, 103, 132, 134, 139, 150b
Leasing	102, 121, 122, 126, 147
Market efficiency	217-221, 226
NPV	88-90, 94-97, 99, 101-119, 134, 137, 146, 147, 150-153
Objectives	5, 7, 9, 12, 13, 20
Overtrading	44, 69, 80
Payables management	54
Payback	86, 91, 131, 138, 146b
Ratio analysis	1, 3, 4, 8, 14, 16, 17, 19, 45, 66, 67, 80, 82b
Receivables management	49, 50, 51, 52, 64, 65, 77b, 78b, 79c, 81a, 81d, 84
ROCE	85, 87, 93, 135, 136
Risk and uncertainty	115-119, 147c, 152, 153, 199c, 231
Sensitivity analysis	130, 133, 150c
Sources of finance	28, 29, 30, 154-158, 169-173, 199, 200c, 203c, 205b, 206
Total shareholder return	10, 18, 195
WACC	201-205, 230
Working capital financing	59, 60, 76b, 80, 82c
Working capital management	45, 61, 68, 70, 76, 78c, 79

Helping you with your revision

BPP Learning Media – ACCA Approved Content Provider

As an **ACCA Approved Content Provider**, BPP Learning Media gives you the **opportunity** to use revision materials reviewed by the ACCA examination team. By incorporating the ACCA examination team's comments and suggestions regarding the depth and breadth of syllabus coverage, the BPP Learning Media Practice & Revision Kit provides excellent, **ACCA-approved** support for your revision.

Tackling revision and the exam

Using feedback obtained from the ACCA examination team review:

- We look at the dos and don'ts of revising for, and taking, ACCA exams
- We focus on Paper F9; we discuss revising the syllabus, what to do (and what not to do) in the exam, how to approach different types of question and ways of obtaining easy marks

Selecting questions

We provide signposts to help you plan your revision.

- A full **question index**
- A **topic index** listing all the questions that cover key topics, so that you can locate the questions that provide practice on these topics, and see the different ways in which they might be examined

Making the most of question practice

At BPP Learning Media we realise that you need more than just questions and model answers to get the most from your question practice.

- Our **top tips** included for certain questions provide essential advice on tackling questions, presenting answers and the key points that answers need to include.
- We show you how you can pick up **easy marks** on some questions, as we know that picking up all readily available marks often can make the difference between passing and failing.
- We include **marking guides** to show you what the examination team rewards.
- We include **comments from the examination team** to show you where students struggled or performed well in the actual exam.
- We refer to the **BPP Study Text for exams in September 2016, December 2016, March 2017 and June 2017** for detailed coverage of the topics covered in questions.

Attempting mock exams

There are three mock exams that provide practice at coping with the pressures of the exam day. We strongly recommend that you attempt them under exam conditions. **Mock exams 1 and 2** reflect the question styles and syllabus coverage of the paper-based and computer-based exams respectively; **Mock exam 3** is the Specimen exam paper.

Revising F9

Topics to revise

The exam consists of 15 objective test questions, 3 objective test cases and 2 longer form questions, all of which are compulsory. No one section in the syllabus is more important than another so there are no short-cuts. You will have to be able to answer questions on the entire syllabus.

Question practice

Practising as many exam-style questions as possible will be the key to passing this exam. You must do questions under **timed conditions** and ensure you write full answers to the discussion parts as well as doing the calculations.

Make sure you practise written sections as well as the calculations.

Passing the F9 exam

Displaying the right qualities

The aim of Paper F9 is to develop the knowledge and skills expected of a finance manager in relation to investment, financing and dividend decisions.

You need to be able to communicate your understanding clearly in an exam context. Calculations and discussions are equally important so do not concentrate on the numbers and ignore the written parts.

You need to be able to:

- Understand the role and purpose of the financial management function
- Assess and understand the impact of the economic environment on financial management
- Discuss and apply working capital management techniques
- Carry out effective investment appraisal
- Identify and evaluate alternative sources of business finance
- Explain and calculate cost of capital and the factors that affect it
- Understand and apply risk management techniques in business

Avoiding weaknesses

- There is no choice in this paper, all questions have to be answered. You must therefore study the entire syllabus, there are no short-cuts.
- Ability to answer multiple choice questions and cases improves with practice. Try to get as much practice with these questions as you can.
- The longer questions will be based on simple scenarios and answers must be focused and specific to the organisation.
- Answer plans for the longer questions will help you to focus on the requirements of the question and enable you to manage your time effectively – but there will not be much time.
- Answer all parts of the longer questions. Even if you cannot do all the calculation elements, you will still be able to gain marks in the discussion parts.

Gaining the easy marks

Easy marks in this paper tend to fall into three categories.

Multiple choice questions

Some MCQs are easier than others. Answer those that you feel fairly confident about as quickly as you can. Come back later to those you find more difficult. This could be a way of making use of the time in the examination most efficiently and effectively.

Many MCQs will not involve calculations. Make sure that you understand the wording of 'written' MCQs before selecting your answer.

Calculations in Section C questions

The calculations within a question will get progressively harder and easy marks will be available in the easy stages. Set out your calculations clearly and show all your workings in a clear format. Use a proforma, for example in complex NPV questions and slot the simpler figures into the proforma straight away before you concentrate on the figures that need a lot of adjustment.

Discussions in Section C questions

A Section C question may separate discussion requirements from calculations, so that you do not need to do the calculations first in order to answer the discussion part. This means that you should be able to gain marks from making sensible, practical comments without having to complete the calculations.

Discussions that are focused on the specific organisation in the question will gain more marks than regurgitation of knowledge. Read the question carefully and more than once, to ensure you are actually answering the specific requirements.

Pick out key words such as 'describe', 'evaluate' and 'discuss'. These all mean something specific.

- 'Describe' means to communicate the key features of
- 'Evaluate' means to assess the value of
- 'Discuss' means to examine in detail by argument

Clearly label the points you make in discussions so that the marker can identify them all rather than getting lost in the detail.

Provide answers in the form requested. Use a report format if asked for and give recommendations if required.

Tackling objective test case questions

First, read the whole case scenario. Make a note of any specific instructions or assumptions, such as 'ignore inflation' in a net present value question.

Then skim through the requirements of the five questions. The questions are independent of each other and can be answered in any order.

Some of the OTs will be easier than others. For example, you may be asked to identify the advantages of the internal rate of return in investment appraisal. Answer these OTs quickly.

Other OTs will be more difficult and/or complex. There are two types of OT that may take you longer to answer.

The first more time-consuming OT will involve doing a computation. For example, you may be asked to calculate the net present value of a project. You will probably need to jot down a quick proforma to answer a computational question like this. If the OT is a multiple choice question, remember that the wrong answers will usually involve common errors so don't assume that because you have the same answer as one of the options that your answer is necessarily correct! Double check to make sure you haven't made any silly mistakes. If you haven't got the same answer as any of the options, rework your computation, thinking carefully about what errors you could have made. If you still haven't got one of the options, choose the one which is nearest to your answer.

The second more time-consuming OT is one where you are asked to consider a number of statements and identify which one (or more) of them is correct. Make sure that you read each statement at least twice before making your selection. Be careful to follow the requirements of the OT exactly, for example if you are asked to identify **two** correct statements.

Exam formulae

Set out below are the formulae which you will be given in the exam, and formulae which you should learn. If you are not sure what the symbols mean, or how the formulae are used, you should refer to the appropriate chapter in this Study Text

Exam formulae	Chapter in Study Text
Economic Order Quantity	5
$= \sqrt{\frac{2C_0 D}{C_h}}$	
Miller-Orr Model	6
Return point = Lower limit + (1/3 × spread)	
$\text{Spread} = 3 \left[\frac{\frac{3}{4} \times \text{transaction cost} \times \text{variance of cash flows}}{\text{interest rate}} \right]^{\frac{1}{3}}$	
The Capital Asset Pricing Model	15
$E(r_i) = R_f + \beta_i (E(r_m) - R_f)$	
The Asset Beta Formula	16
$\beta_a = \left[\frac{V_e}{(V_e + V_d(1-T))} \beta_e \right] + \left[\frac{V_d(1-T)}{(V_e + V_d(1-T))} \beta_d \right]$	
The Growth Model	17
$P_0 = \frac{D_0(1+g)}{(r_e - g)}$	
Gordon's Growth Approximation	17
$g = b r_e$	
The weighted average cost of capital	15
$\text{WACC} = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d (1-T)$	
The Fisher formula	19
$(1+i) = (1+r)(1+h)$	
Purchasing Power Parity and Interest Rate Parity	
$S_1 = S_0 \times \frac{(1+h_c)}{(1+h_b)}$	19
$F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$	19

Formulae to learn

Profitability ratios include:

$$\text{ROCE} = \frac{\text{Profit before interest and tax (PBIT)}}{\text{Capital employed}}$$

$$\text{ROCE} = \frac{\text{PBIT}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Capital employed}}$$

$$\text{ROCE} = \text{Profit margin} \times \text{asset turnover}$$

Debt ratios include:

$$\text{Gearing} = \frac{\text{Debt}}{\text{Equity}} \text{ or } \frac{\text{Debt}}{\text{Debt} + \text{Equity}} \text{ (and either book values or market values can be used)}$$

$$\text{Gearing} = \frac{\text{Prior charge capital}}{\text{Equity capital (including reserves)}}$$

$$\text{Interest coverage} = \frac{\text{PBIT}}{\text{Interest}}$$

Liquidity ratios include:

$$\text{Current ratio} = \text{Current assets} : \text{Current liabilities}$$

$$\text{Acid Test ratio} = \text{Current assets less inventory} : \text{Current liabilities}$$

Shareholder investor ratios include:

$$\text{Dividend yield} = \frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$$

$$\text{Earnings per share} = \frac{\text{Profits distributable to ordinary shareholders}}{\text{Number of ordinary shares issued}}$$

$$\text{Price earnings (P/E) ratio} = \frac{\text{Market price per share}}{\text{EPS}}$$

$$\text{Accounts receivable days} = \frac{\text{Receivables}}{(\text{credit}) \text{ sales}} \times 365 \text{ days}$$

Inventory days

$$(a) \text{ Finished goods} = \frac{\text{Finished goods}}{\text{Cost of sales}} \times 365 \text{ days}$$

$$(b) \text{ WIP} = \frac{\text{Average WIP}}{\text{Cost of sales}} \times 365 \text{ days}$$

$$(c) \text{ Raw material: } \frac{\text{Average raw material inventory}}{\text{Annual raw material purchases}} \times 365 \text{ days}$$

$$\text{Accounts payable period} = \frac{\text{Payables}}{\text{Credit purchases (or cost of sales if purchases unavailable)}} \times 365 \text{ days}$$

$$\text{IRR} = a + \frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} (b - a)$$

$$\text{Equivalent annual cost} = \frac{\text{PV of cost over one replacement cycle}}{\text{Annuity factor for the number of years in the cycle}}$$

$$\text{Cost of equity} = K_e = \frac{D_1}{P_0} + g$$

$$\text{Cost of debt} = K_d = \frac{i(1 - T)}{P_0}$$

$$\text{Cost of preference shares} = K_{\text{pref}} = \frac{\text{Preference Dividend}}{\text{Market Value}_{(\text{ex div})}} = \frac{d}{P_0}$$

$$\text{Profitability index} = \frac{\text{PV of cash flows (not including capital investment)}}{\text{Capital investment}}$$

Exam information

Computer based exams

ACCA have announced that they intend to commence the launch of computer based exams (CBEs) for F5-F9. They will be piloting computer based exams in limited markets in September 2016 with the aim of rolling out into all markets internationally over a five year period. Paper based examinations will be run in parallel while the CBEs are phased in and BPP materials have been designed to support you, whichever exam option you choose.

Format of the exam

The exam format is the same irrespective of the mode of delivery and will comprise three exam sections.

Section	Style of question type	Description	Proportion of exam, %
A	Objective test (OT)	15 questions x 2 marks	30
B	Objective test (OT) case	3 questions x 10 marks Each question will contain 5 subparts each worth 2 marks	30
C	Constructed Response (Long questions)	2 questions x 20 marks	40
Total			100

Section A and B questions will be selected from the entire syllabus. The paper version of these objective test questions contain multiple choice only and the computer based versions will contain a variety. The responses to each question or subpart in OT cases are marked automatically as either correct or incorrect by computer.

Section C questions will mainly focus on the following syllabus areas but a minority of marks can be drawn from any other area of the syllabus

- Working capital management (syllabus area C)
- Investment appraisal (syllabus area D)
- Business finance (syllabus area E)

The responses to these questions are human marked.

Additional information

The Study Guide provides more detailed guidance on the syllabus.

Useful websites

The websites below provide additional sources of information of relevance to your studies for *Financial Management*.

- www.accaglobal.com

ACCA's website. The students' section of the website is invaluable for detailed information about the qualification, past issues of Student Accountant (including technical articles) and a free downloadable Student Planner App.
- [www.bpp.com](http://www bpp com)

Our website provides information about BPP products and services, with a link to the ACCA website.
- [www.ft.com](http://www ft com)

This website provides information about current international business. You can search for information and articles on specific industry groups as well as individual companies. (**Note:** Subscription required)
- [www.economist.com](http://www economist com)

Here you can search for business information on a week-by-week basis, search articles by business subject and use the resources of the Economist Intelligence Unit to research sectors, companies or countries.
(**Note:** Subscription required for some content)
- [www.investmentweek.co.uk](http://www investmentweek co uk)

This site carries business news and articles on markets from Investment Week and International Investment.
- [www.pwc.com](http://www pwc com)

The PricewaterhouseCoopers website includes UK Economic Outlook.
- [www.cfo.com](http://www cfo com)

Good website for financial officers.
- [www.bankofengland.co.uk](http://www bankofengland co uk)

This website is useful for sourcing Bank of England publications.

Questions

FINANCIAL MANAGEMENT FUNCTION

Questions 1 to 20 cover Financial management function, the subject of Part A of the BPP Study Text for Paper F9.

MCQ bank – Financial management and financial objectives

20 mins

- 1 Last year ABC Co made profits before tax of \$2,628,000. Tax amounted to \$788,000. ABC Co's share capital was \$2,000,000 (2,000,000 shares of \$1) and \$4,000,000 6% preference shares. What was the earnings per share (EPS) for the year?
- A 31c
B 80c
C 92c
D 119c
- (2 marks)
- 2 The following statements relate to various functions within a business.
- 1 The financial management function makes decisions relating to finance
2 Management accounts incorporate non-monetary measures
- Are the statements true or false?
- A Statement 1 is true and statement 2 is false
B Both statements are true
C Statement 1 is false and statement 2 is true
D Both statements are false
- (2 marks)
- 3 A company has recently declared a dividend of 12c per share. The share price is \$3.72 cum div and earnings for the most recent year were 60c per share.
- What is the P/E ratio?
- A 0.17
B 6.00
C 6.20
D 6.60
- (2 marks)
- 4 The following information relates to the ordinary shares of G Co.
- | | |
|--------------------------|------|
| Earnings per share | 60c |
| Dividend cover | 2.5 |
| Published dividend yield | 4.8% |
- What is the price of G Co's ordinary shares implied by the data above?
- A 24c
B 115c
C 313c
D 500c
- (2 marks)
- 5 Which of the following is most appropriate as an objective of a not-for-profit organisation?
- A To achieve long term growth in earnings
B To maximise shareholder wealth
C To make efficient use of resources
D To minimise input costs
- (2 marks)
- (Total = 10 marks)**

CBE style OTQ bank – Financial management and financial objectives

39 mins

- 6 Which of the following are the THREE key areas covered by financial management decisions?

- Investment
- Cash flow
- Finance
- Dividend

(2 marks)

- 7 Which of the following does NOT form part of the objectives of a corporate governance best practice framework?

- Separation of chairperson and CEO roles
- Establishment of audit, nomination and remuneration committees
- Minimisation of risk
- Employment of non-executive directors

(2 marks)

- 8 The following information relates to A Co for the last financial year.

Revenue	\$200 million
Asset turnover	10 times
Interest payable	\$1.5 million
Interest cover ratio	5 times

What is the return on capital employed for A Co for the year?

(2 marks)

- 9 A school decides to have larger classes, and examination results suffer as a result. In terms of the 'value for money' framework, which one of the following statements is true?

- Economy has increased but efficiency has decreased
- Efficiency has increased but effectiveness has decreased
- Economy has increased but effectiveness has decreased
- Economy has increased, but efficiency and effectiveness have decreased

(2 marks)

- 10 H Co's share price is \$3.50 at the end of 20X1 and this includes a capital gain of \$0.75 since the beginning of the period. A dividend of \$0.25 has been declared for 20X1.

What is the shareholder return (to 1 dp)?

(2 marks)

- 11 Stakeholders can be classified as internal, connected or external. Which of the following is an external stakeholder?

- Shareholders
- Customers
- Bankers
- Government

(2 marks)

- 12 A government body uses measures based upon the 'three Es' to measure value for money generated by a publicly funded hospital.

Which of the following relates to efficiency?

- Cost per successfully treated patient
 - Cost per operation
 - Proportion of patients readmitted after unsuccessful treatment
 - Percentage change in doctors' salaries compared with previous year
- (2 marks)

- 13 In not-for-profit businesses and state-run entities, a value-for-money audit can be used to measure performance. It covers three key areas: economy, efficiency and effectiveness. Which of the following could be used to describe effectiveness in this context?

- Avoiding waste of inputs
 - Achieving agreed targets
 - Achieving a given level of profit
 - Obtaining suitable quality inputs at the lowest price
- (2 marks)

- 14 Which of the following statements are valid criticisms of return on capital employed (ROCE) as a performance measure?

- 1 It is misleading if used to compare departments with different levels of risk
- 2 It is misleading if used to compare departments with assets of different ages
- 3 Its use may discourage investment in new or replacement assets
- 4 The figures needed are not easily available

- 2 and 3 only
 - 2 and 4 only
 - 1 and 3 only
 - 1, 2 and 3
- (2 marks)

- 15 Are the following statements true or false?

True False

- 1 Cash flow forecasting is primarily the responsibility of financial reporting
- 2 Whether to undertake a particular new project is a financial management decision

(2 marks)

(Total = 20 marks)

The following scenario relates to questions 16 – 20.

Summary financial information for ABC Co is given below, covering the last two years.

	<i>20X8</i>	<i>20X7</i>
	\$'000	\$'000
STATEMENT OF PROFIT OR LOSS (EXTRACT)		
Revenue	74,521	68,000
Cost of sales	28,256	25,772
Salaries and wages	20,027	19,562
Other costs	<u>11,489</u>	<u>9,160</u>
Profit before interest and tax	14,749	13,506
Interest	1,553	1,863
Tax	<u>4,347</u>	<u>3,726</u>
Profit after interest and tax	8,849	7,917
Dividends payable	4,800	3,100
	<i>20X8</i>	<i>20X7</i>
STATEMENT OF FINANCIAL POSITION (EXTRACT)	\$'000	\$'000
Shareholders' funds	39,900	35,087
Long term debt	<u>14,000</u>	<u>17,500</u>
	53,900	52,587
Other information		
Number of shares in issue ('000)	14,000	14,000
P/E ratio (average for year)		
ABC Co	14.0	13.0
Industry	15.2	15.0
<i>Shareholders' investment</i>		
EPS	\$0.63	\$0.57
Share price	\$8.82	\$7.41
Dividend per share	\$0.34	\$0.22

16 What is the percentage increase in return on capital (ROCE) for ABC Co between 20X7 and 20X8?

- A 6.2%
- B 6.7%
- C 7.9%
- D 8.6%

(2 marks)

17 What is the net profit margin for 20X8?

- A 5.05%
- B 8.42%
- C 11.9%
- D 19.8%

(2 marks)

18 What is the shareholder return?

- A 14.4%
- B 19.0%
- C 19.8%
- D 23.6%

(2 marks)

19 As well as the information above, the following extra data is available:

	20X8	20X7
Gearing (Debt/Equity)	35.1%	49.9%
Interest cover (PBIT/Interest)	9.5	7.2

Based on all of the information available, are the following statements true or false?

- 1 Employees may be unhappy with their wages in 20X8
- 2 Financial risk for shareholders appears to be a problem area
- A Statement 1 is true and statement 2 is false
- B Both statements are true
- C Statement 1 is false and statement 2 is true
- D Both statements are false

(2 marks)

20 Accounting profits may not be the best measure of a company's performance.

Which of the following statements support this theory?

- 1 Profits are affected by accounting policies
- 2 Profits take no account of risk
- 3 Profits take no account of the level of investment made during the year
- 4 Profits are measures of short-term historic performance
- A 2 and 4 only
- B 1, 2, 3 and 4
- C 2 and 3 only
- D 1 only

(2 marks)

(Total = 10 marks)

FINANCIAL MANAGEMENT ENVIRONMENT

Questions 21 to 40 cover Financial management environment, the subject of Part B of the BPP Study Text for Paper F9.

MCQ bank – Financial management environment

20 mins

- 21 A government has adopted a contractionary fiscal policy.

How would this typically affect businesses?

- A Higher interest rates and higher inflation
- B Lower taxes and higher government subsidies
- C Higher taxes and lower government subsidies
- D Lower inflation and lower interest rates

(2 marks)

- 22 A government follows an expansionary monetary policy.

How would this typically affect businesses?

- A Higher demand from customers, lower interest rates on loans and increased availability of credit
- B A contraction in demand from customers, higher interest rates and less available credit
- C Lower taxes, higher demand from customers but less government subsidies/available contracts
- D Lower interest rates, lower exchange rates and higher tax rates

(2 marks)

- 23 As the economy booms and approaches the limits of productivity at a point in time, a manufacturing business would typically feel which one of the following effects?

- A Increased inflation (higher sales prices and higher costs), difficulty in finding suitable candidates to fill roles and higher interest rates
- B High export demand, increasing growth rates, high inflation and high interest rates
- C Reducing inflation, falling demand, reducing investment, increasing unemployment
- D Higher government spending, lower tax rates, high inflation and low unemployment

(2 marks)

- 24 Which one of the following statements is incorrect?

- A Money markets are markets for long-term capital
- B Money markets are operated by banks and other financial institutions
- C Money market instruments include interest-bearing instruments, discount instruments and derivatives
- D Money market instruments are traded over the counter between institutional investors

(2 marks)

- 25 Which of the following organisations is most likely to benefit from a period of high price inflation?

- A An organisation which has a large number of long term payables
- B An exporter of goods to a country with relatively low inflation
- C A supplier of goods in a market where consumers are highly price sensitive and substitute imported goods are available
- D A large retailer with a high level of inventory on display and low rate of inventory turnover

(2 marks)

(Total = 10 marks)

MCQ bank – Financial management environment

20 mins

- 26 Which of the following is NOT a function that financial intermediaries fulfil for customers and borrowers?
- A Maturity transformation
B Fund aggregation
C Dividend creation
D Pooling of losses (2 marks)
- 27 Which of the following are money market instruments?
- 1 Certificate of deposit
2 Corporate bond
3 Commercial paper
4 Treasury bill
- A 1, 2 and 4 only
B 1 and 3 only
C 1, 3 and 4 only
D 1, 2, 3 and 4 (2 marks)
- 28 Which of the following statements about obtaining a full stock market listing is NOT correct?
- A Compliance costs are likely to increase, but better public profile and access to funds benefit the business.
B All else being equal the value of the business is likely to be unaffected.
C It allows owners to realise their investment.
D It increases the liquidity of the shares for shareholders. (2 marks)
- 29 AB plc, a company listed in UK and Australia, decides to issue unsecured US dollar bonds in Australia.
- What are these bonds referred to as?
- A Junk bonds
B Commercial paper
C Eurobonds
D Intercontinental bills (2 marks)
- 30 Rank the following from highest risk to lowest risk from the investor's perspective.
- 1 Preference share
2 Treasury bill
3 Corporate bond
4 Ordinary share
- A 1, 4, 3, 2
B 1, 4, 2, 3
C 4, 2, 1, 3
D 4, 1, 3, 2 (2 marks)
- (Total = 10 marks)

MCQ bank – Financial management environment

20 mins

- 31 Interest rates in Isopia have recently been reduced. Which of the following is most likely to result from a cut in interest rates?
- A An increase in savings
B An increase in spending
C A decrease in borrowing
D A decrease in consumption (2 marks)

- 32 Which of the following is most likely to increase aggregate demand in the economy?
- A Increased saving
 - B Increased spending on imports
 - C Increased taxation
 - D Increased investment
- (2 marks)
- 33 Which of the following would be likely to occur if there was an increase in the money supply in the economy?
- A A rise in the rate of inflation
 - B A rise in interest rates
 - C A rise in exchange rates
 - D A fall in the levels of investment
- (2 marks)
- 34 Which of the following is an aspect of fiscal policy measures by the government?
- A To raise short-term interest rates in the money markets
 - B To support the exchange rate for the country's currency
 - C To control growth in the money supply
 - D To alter rates of taxation
- (2 marks)
- 35 The government of Beeland is operating an expansionary fiscal policy. Which of the following is this most likely to include?
- A A fall in interest rates
 - B An increase in corporation tax
 - C An increase in government spending
 - D An increase in the money supply
- (2 marks)
- (Total = 10 marks)**

CBE style OTQ bank – Financial management environment

20 mins

- 36 The following statements relate to fiscal policy and demand management.

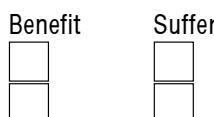
Are the statements true or false?

True False

- | | | | |
|---|--|--------------------------|--------------------------|
| 1 | If a government spends more by borrowing more, it will raise demand in the economy | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | If demand in the economy is high then government borrowing will fall | <input type="checkbox"/> | <input type="checkbox"/> |
- (2 marks)

- 37 If the US dollar weakens against the pound sterling, will UK exporters and importers suffer or benefit?

UK exporters to US
UK importers from US



(2 marks)

- 38 Government macroeconomic objectives typically include which THREE of the following?

- Economic growth and high employment
- Low inflation
- Balance of payments stability
- A guaranteed minimum income for all

(2 marks)

39 Which THREE of the following are among the main goals of macroeconomic policy?

- Encouraging economic growth
- Low and stable inflation
- Achievement of a balance between exports and imports
- Encouraging an equitable distribution of income

(2 marks)

40 If a government has a macro-economic policy objective of expanding the overall level of economic activity, which of the following measures would NOT be consistent with such an objective?

- Increasing public expenditure
- Lowering interest rates
- Increasing the exchange rate
- Decreasing taxation

(2 marks)

(Total = 10 marks)

WORKING CAPITAL MANAGEMENT

Questions 41 to 84 cover Working capital management, the subject of Part C of the BPP Study Text for Paper F9.

MCQ bank – Working capital

20 mins

- 41 The following has been calculated for BB Co:

Receivables days: 58
Inventory turnover: 10 times per annum
Payables days: 45
Non-current asset days: 36

What is the length of the cash operating cycle?

- A 23 days
B 49.5 days
C 85.5 days
D 139.5 days

(2 marks)

- 42 D Co decides to offer a 2% early settlement discount that half of all customers take up. They pay in 1 month instead of the usual 2. D Co pays 10% per annum for its overdraft facility.

What impact will this have?

Cash operating cycle Reported profits

- | | | |
|---|------------|----------|
| A | Reduce | Increase |
| B | Unaffected | Increase |
| C | Reduce | Reduce |
| D | Unaffected | Reduce |

(2 marks)

- 43 WW Co has a current ratio of 2. Receivables are \$3 million and current liabilities are \$2 million.

What are inventory days if cost of sales is \$10 million per annum?

- A 36.5 days
B 91.25 days
C 14.6 days
D 243.3 days

(2 marks)

- 44 Which of the following best describes overtrading?

- A Selling more than you can manufacture and/or you hold in inventory.
B Having too much working capital thus reducing profitability.
C Selling stocks and shares outside the stock exchange opening hours.
D Suffering liquidity issues as a result of growing too quickly.

(2 marks)

- 45 MM Co sells some inventory on credit for a profit.

All else being equal, what will happen to the quick and current ratio after this sale?

- | | | |
|---|--------------|----------------|
| | <i>Quick</i> | <i>Current</i> |
| A | Increase | Decrease |
| B | No change | Increase |
| C | Increase | No change |
| D | Increase | Increase |

(2 marks)

(Total = 10 marks)

CBE style OTQ bank – Managing working capital

39 mins

- 46 TS Co has daily demand for ball bearings of 40 a day for each of the 250 working days (50 weeks) of the year. The ball bearings are purchased from a local supplier for \$2 each. The cost of placing an order is \$64 per order, regardless of the size of the order. The inventory holding costs, expressed as a percentage of inventory purchase price, is 25% per annum.

What is the economic order quantity?

 ball bearings

(2 marks)

- 47 EE Co has calculated the following in relation to its inventories.

Buffer inventory level	50 units
Reorder size	250 items
Fixed order costs	\$50 per order
Cost of holding onto one item pa	\$1.25 per year
Annual demand	10,000 items
Purchase price	\$2 per item

What are the total inventory related costs for a year (to the nearest whole \$)?

(2 marks)

- 48 Which of the following is NOT generally a benefit of a 'just in time' approach?

- Lower inventory levels
- Better product customisation
- Ease of production scheduling
- Higher quality

(2 marks)

- 49 XYZ Co has annual credit sales of \$20 million and accounts receivable of \$4 million. Working capital is financed by an overdraft at 12% interest per year. Assume 365 days in a year.

What is the annual financial effect if management reduces the collection period to 60 days by offering an early settlement discount of 1% that all customers adopt?

- \$85,479 benefit
- \$114,521 cost
- \$85,479 cost
- \$285,479 benefit

(2 marks)

- 50 Which of the following services may be provided by a debt factor?

- 1 Bad debt insurance
- 2 Advancement of credit
- 3 Receivables ledger management
- 4 Management of debt collection processes

- 1, 2 and 4 only
- 1 and 4 only
- 1, 2 and 3 only
- 1, 2, 3 and 4

(2 marks)

- 51 Which of the following is LEAST likely to be used in the management of foreign accounts receivable?
- Letters of credit
 Bills of exchange
 Invoice discounting
 Commercial paper
- (2 marks)
- 52 L Co is considering whether to factor its sales invoices. A factor has offered L Co a non recourse package at a cost of 1.5% of sales and an admin fee of \$6,000 per annum. Bad debts are currently 2% of sales per annum and sales are \$1.5m per annum.
- What is the cost of the package of L Co?
- \$
- (2 marks)
- 53 Which of the following is NOT a drawback of the EOQ model?
- Assumes certain or zero lead times.
 Assumes certainty in demand.
 Assumes a small number of close suppliers.
 Ignores hidden costs such as the risk of obsolescence.
- (2 marks)
- 54 Which of the following is NOT a potential hidden cost of increasing credit taken from suppliers?
- Damage to goodwill
 Early settlement discounts lost
 Business disruption
 Increased risk of bad debts
- (2 marks)
- 55 Which of the following would be LEAST likely to arise from the introduction of a just-in-time inventory ordering system?
- Lower inventory holding costs
 Less risk of inventory shortages
 More frequent deliveries
 Increased dependence on suppliers
- (2 marks)

(Total = 20 marks)

CBE style OTQ bank – Working capital finance 20 mins

- 56 JP Co has budgeted that sales will be \$300,100 in January 20X2, \$501,500 in February, \$150,000 in March and \$320,500 in April. Half of sales will be credit sales. 80% of receivables are expected to pay in the month after sale, 15% in the second month after sale, while the remaining 5% are expected to be bad debts. Receivables who pay in the month after sale can claim a 4% early settlement discount.

What level of sales receipts should be shown in the cash budget for March 20X2 (to the nearest \$)?

\$

(2 marks)

- 57 WW Co is a subsidiary of BB Co. WW Co requires \$10 million in finance to be easily spread over the coming year, which BB Ltd will supply. Research shows:

There is a standing bank fee of \$200 for each drawdown.

The interest cost of holding cash (ie finance cost less deposit interest) is 6% pa.

How much should WW Co draw down at a time (to the nearest \$'000)?

\$

(2 marks)

- 58 The treasury department in TB Co has calculated, using the Miller-Orr model, that the lowest cash balance they should have is \$1m, and the highest is \$10m. If the cash balance goes above \$10m they transfer the cash into money market securities.

Are the following true or false?

	True	False
1 When the balance reaches \$10m they would buy \$6m of securities	<input type="checkbox"/>	<input type="checkbox"/>
2 When the cash balance falls to \$1m they will sell \$3m of securities	<input type="checkbox"/>	<input type="checkbox"/>
3 If the variance of daily cash flows increases the spread between upper and lower limit will be increased.	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

- 59 Which statement best reflects an aggressive working capital *finance* policy?

- More short-term finance is used because it is cheaper although it is risky.
Investors are forced to accept lower rates of return.
More long-term finance is used as it is less risky.
Inventory levels are reduced.

(2 marks)

- 60 What are the TWO key risks for the borrower associated with short-term working capital finance?

- Rate risk
Renewal risk
Inflexibility
Maturity mismatch

(2 marks)

(Total = 10 marks)

Section B questions

PKA Co (12/07, amended)

20 mins

The following scenario relates to questions 61 – 65.

PKA Co is a European company that sells goods solely within Europe. The recently-appointed financial manager of PKA Co has been investigating working capital management objectives and the working capital management of the company, and has gathered the following information about the inventory policy and accounts receivable.

Inventory management

The current policy is to order 100,000 units when the inventory level falls to 35,000 units. Forecast demand to meet production requirements during the next year is 625,000 units. The cost of placing and processing an order is \$250, while the cost of holding a unit in stores is \$0.50 per unit per year. Both costs are expected to be constant during the next year. Orders are received two weeks after being placed with the supplier. You should assume a 50-week year and that demand is constant throughout the year.

Accounts receivable management

Customers are allowed 30 days' credit, but the financial statements of PKA Co show that the average accounts receivable period in the last financial year was 75 days. This is in line with the industry average. The financial manager also noted that bad debts as a percentage of sales, which are all on credit, increased in the last financial year from 5% to 8%. The accounts receivables department is currently short staffed.

61 What are the objectives of working capital management at PKA?

- 1 To ensure that PKA Co has sufficient liquid resources
 - 2 To increase PKA Co's profitability
 - 3 To ensure that PKA Co's assets give the highest possible returns
- A 1 only
 - B 1 and 2 only
 - C 2 and 3 only
 - D 1, 2 and 3

(2 marks)

62 What is the current minimum inventory level at PKA Co?

- A 10,000
- B 12,500
- C 22,500
- D 35,000

(2 marks)

63 What is the economic order quantity?

- A 250
- B 3,536
- C 17,678
- D 25,000

(2 marks)

64 What are the best ways for PKA Co to improve the management of accounts receivable?

- 1 Assess the creditworthiness of new customers
 - 2 Introduce early settlement discounts
 - 3 Take legal action against the slow payers and non-payers
- A 1 and 2 only
 - B 2 only
 - C 1 and 3 only
 - D 1, 2 and 3

(2 marks)

65 In order to improve the management of receivables, PKA Co is considering using a factor.

Which of the following are benefits of factoring for PKA?

- 1 Credit customers make payments directly to the factor
 - 2 Accounts receivable will be handled by a dedicated team
 - 3 Optimum levels of inventory can be maintained
- A 2 only
B 1, 2 and 3
C 2 and 3 only
D 1 and 3 only

(2 marks)

(Total = 10 marks)

CBE style OT case Gorwa Co (12/08, amended)

20 mins

The following scenario relates to questions 66 – 70.

The financial manager of Gorwa Co is worried about the level of working capital and that the company may be overtrading.

The following extract financial information relates to the last two years:

	20X7	20X6
	\$'000	\$'000
Sales (all on credit)	37,400	26,720
Cost of sales	<u>34,408</u>	<u>23,781</u>
Operating profit	2,992	2,939
	20X7	20X6
	\$'000	\$'000
Current assets		
Inventory	4,600	2,400
Trade receivables	<u>4,600</u>	<u>2,200</u>
	9,200	4,600
Current liabilities	7,975	3,600

66 What is the sales/net working capital ratio for 20X7 (to 2 dp)?

20X7 times

(2 marks)

67 By what percentage have inventories increased between 20X6 and 20X7 (to the nearest whole percentage)?

%

(2 marks)

68 Are the following statements true or false for Gorwa Co?

- True False
- Accounts receivable turnover has slowed down
Inventory turnover has slowed down

(2 marks)

69 Gorwa Co is concerned about overtrading.

Which TWO of the following are symptoms of overtrading?

- Rapid reduction in sales revenue
- Slow down in inventory turnover
- Shortening of payment period to accounts payables
- A fall in the current ratio

(2 marks)

70 Gorwa Co's working capital is most likely to increase in which of the following situations?

- Payments to suppliers are delayed
- The period of credit extended to customers is reduced
- Non-current assets are sold
- Inventory levels are increased

(2 marks)

(Total = 10 marks)

CBE style OT case Cat Co

20 mins

The following scenario relates to questions 71 – 75.

Cat Co places monthly orders with a supplier for 10,000 components which are used in its manufacturing processes. Annual demand is 120,000 components. The current terms are payment in full within 90 days, which Cat Co meets, and the cost per component is \$7.50. The cost of ordering is \$200 per order, while the cost of holding components in inventory is \$1.00 per component per year.

The supplier has offered a discount of 3.6% on orders of 30,000 or more components. If the bulk purchase discount is taken, the cost of holding components in inventory would increase to \$2.20 per component per year due to the need for a larger storage facility.

71 What is the current total annual cost of inventory?

\$

(2 marks)

72 What is the total annual inventory cost if Cat Co orders 30,000 components at a time?

\$

(2 marks)

73 Cat Co has annual credit sales of \$25 million and accounts receivable of \$5 million. Working capital is financed by an overdraft at 10% interest per year. Assume 365 days in a year.

What is the annual finance cost saving if Cat Co reduces the collection period to 60 days (to the nearest whole number)?

\$

(2 marks)

74 Cat Co is reviewing its working capital management.

Which TWO of the following statements concerning working capital management are correct?

- The twin objectives of working capital management are profitability and liquidity
- A conservative approach to working capital investment will increase profitability
- Working capital management is a key factor in a company's long-term success
- Liquid assets give the highest returns leading to conflicts of objectives

(2 marks)

75 Management at Cat Co are considering an aggressive approach to financing working capital.

Which of the following statements relate to an aggressive approach to financing working capital management?

- 1 All non-current assets, permanent current assets and part of fluctuating current assets are financed by long-term funding
 - 2 There is an increased risk of liquidity and cash flow problems
- Both statements relate to an aggressive approach
 Neither statement relates to an aggressive approach
 Statement 1 only relates to an aggressive approach
 Statement 2 only relates to an aggressive approach

(2 marks)

(Total = 10 marks)

Section C questions

76 APX Co (12/09, amended)

39 mins

APX Co achieved a revenue of \$16 million in the year that has just ended and expects revenue growth of 8.4% in the next year.

The financial statements of APX Co for the year that has just ended contain the following statement of financial position:

	\$m	\$m
Non-current assets		22.0
Current assets		
Inventory	2.4	
Trade receivables	2.2	
		4.6
Total assets		26.6
Equity finance:		
Ordinary shares	\$m	\$m
Reserves	5.0	7.5
		12.5
Long-term bank loan		10.0
		22.5
Current liabilities		
Trade payables	1.9	
Overdraft	2.2	
		4.1
Total equity and liabilities		26.6

The long-term bank loan has a fixed annual interest rate of 8% per year. APX Co pays taxation at an annual rate of 30% per year.

The following accounting ratios have been forecast for the next year:

Gross profit margin:	30%
Operating profit margin:	20%
Dividend payout ratio:	50%
Inventory turnover period:	110 days
Trade receivables period:	65 days
Trade payables period:	75 days

Overdraft interest in the next year is forecast to be \$140,000. No change is expected in the level of non-current assets and depreciation should be ignored.

Required

- (a) Prepare the following forecast financial statements for APX Co using the information provided:
- (i) A statement of profit or loss for the next year
 - (ii) A statement of financial position at the end of the next year
- (9 marks)
- (b) Analyse and discuss the working capital financing policy of APX Co.
- (6 marks)
- (c) Discuss the role of financial intermediaries in providing short-term finance for use by business organisations.
- (5 marks)

(Total = 20 marks)

77 ZSE Co (6/10, amended)

39 mins

ZSE Co is concerned about exceeding its overdraft limit of \$2 million in the next two periods. It has been experiencing considerable volatility in cash flows in recent periods because of trading difficulties experienced by its customers, who have often settled their accounts after the agreed credit period of 60 days. ZSE has also experienced an increase in bad debts due to a small number of customers going into liquidation.

The company has prepared the following forecasts of net cash flows for the next two periods, together with their associated probabilities, in an attempt to anticipate liquidity and financing problems. These probabilities have been produced by a computer model which simulates a number of possible future economic scenarios. The computer model has been built with the aid of a firm of financial consultants.

<i>Period 1 cash flow</i>	<i>Probability</i>	<i>Period 2 cash flow</i>	<i>Probability</i>
\$'000		\$'000	
8,000	10%	7,000	30%
4,000	60%	3,000	50%
(2,000)	30%	(9,000)	20%

ZSE Co expects to be overdrawn at the start of period 1 by \$500,000.

Required

- (a) Calculate the following:
- (i) The expected value of the period 1 closing balance;
 - (ii) The expected value of the period 2 closing balance;
 - (iii) The probability of a negative cash balance at the end of period 2;
 - (iv) The probability of exceeding the overdraft limit at the end of period 2.
- Discuss whether the above analysis can assist the company in managing its cash flows. **(12 marks)**
- (b) Identify and discuss the factors to be considered in formulating a trade receivables management policy for ZSE Co.
- (8 marks)

(Total = 20 marks)

78 WQZ Co (12/10, amended)

39 mins

WQZ Co is considering making the following changes in the area of working capital management:

Inventory management

It has been suggested that the order size for Product KN5 should be determined using the economic order quantity model (EOQ).

WQZ Co forecasts that demand for Product KN5 will be 160,000 units in the coming year and it has traditionally ordered 10% of annual demand per order. The ordering cost is expected to be \$400 per order while the holding cost is expected to be \$5.12 per unit per year. A buffer inventory of 5,000 units of Product KN5 will be maintained, whether orders are made by the traditional method or using the economic order quantity model.

Receivables management

WQZ Co could introduce an early settlement discount of 1% for customers who pay within 30 days and at the same time, through improved operational procedures, maintain a maximum average payment period of 60 days for credit customers who do not take the discount. It is expected that 25% of credit customers will take the discount if it were offered.

It is expected that administration and operating cost savings of \$753,000 per year will be made after improving operational procedures and introducing the early settlement discount.

Credit sales of WQZ Co are currently \$87.6 million per year and trade receivables are currently \$18 million. Credit sales are not expected to change as a result of the changes in receivables management. The company has a cost of short-term finance of 5.5% per year.

Required

- (a) Calculate the cost of the current ordering policy and the change in the costs of inventory management that will arise if the economic order quantity is used to determine the optimum order size for Product KN5. **(5 marks)**
- (b) Calculate and comment on whether the proposed changes in receivables management will be acceptable. Assuming that only 25% of customers take the early settlement discount, what is the maximum early settlement discount that could be offered? **(7 marks)**
- (c) Discuss the factors that should be considered in formulating working capital policy on the management of trade receivables. **(8 marks)**

(Total = 20 marks)

79 Bold Co (12/11, amended)

39 mins

Extracts from the recent financial statements of Bold Co are given below.

	\$'000		\$'000
Revenue	21,300		
Cost of sales	16,400		
Gross profit	<u>4,900</u>		
Non-current assets		\$'000	\$'000
Current assets		3,000	
Inventory	4,500		
Trade receivables	<u>3,500</u>		
			8,000
Total assets			<u>11,000</u>
Equity			
Ordinary shares	1,000		
Reserves	<u>1,000</u>		
			2,000
Non-current liabilities			
Bonds			3,000
Current liabilities			
Trade payables	3,000		
Overdraft	<u>3,000</u>		
			6,000
Total equity and liabilities			<u>11,000</u>

A factor has offered to manage the trade receivables of Bold Co in a servicing and factor-financing agreement. The factor expects to reduce the average trade receivables period of Bold Co from its current level to 35 days; to reduce bad debts from 0.9% of revenue to 0.6% of revenue; and to save Bold Co \$40,000 per year in administration costs. The factor would also make an advance to Bold Co of 80% of the revised book value of trade receivables. The interest rate on the advance would be 2% higher than the 7% that Bold Co currently pays on its overdraft. The factor would charge a fee of 0.75% of revenue on a with-recourse basis, or a fee of 1.25% of revenue on a non-recourse basis. Assume that there are 365 working days in each year and that all sales and supplies are on credit.

Required

- (a) Explain the meaning of the term 'cash operating cycle' and discuss the relationship between the cash operating cycle and the level of investment in working capital. Your answer should include a discussion of relevant working capital policy and the nature of business operations. **(8 marks)**
- (b) Calculate the cash operating cycle of Bold Co. (Ignore the factor's offer in this part of the question). **(4 marks)**
- (c) Calculate the value of the factor's offer:
 - (i) on a with-recourse basis;
 - (ii) on a non-recourse basis.**(8 marks)**

(Total = 20 marks)

80 Wobnig Co (6/12, amended)

39 mins

The following financial information relates to Wobnig Co.

	<i>20X1</i>	<i>20X0</i>
	\$'000	\$'000
Revenue	14,525	10,375
Cost of sales	10,458	6,640
Profit before interest and tax	<u>4,067</u>	<u>3,735</u>
Interest	355	292
Profit before tax	3,712	3,443
Taxation	1,485	1,278
Distributable profit	<u>2,227</u>	<u>2,165</u>

	<i>20X1</i>	<i>20X0</i>
	\$'000	\$'000
Non-current assets	15,284	14,602
Current assets		
Inventory	2,149	1,092
Trade receivables	<u>3,200</u>	<u>1,734</u>
	<u>5,349</u>	<u>2,826</u>
Total assets	<u>20,633</u>	<u>17,428</u>
Equity		
Ordinary shares	8,000	8,000
Reserves	<u>4,268</u>	<u>3,541</u>
	<u>12,268</u>	<u>11,541</u>
Non-current liabilities		
7% Bonds	4,000	4,000
Current liabilities		
Trade payables	2,865	1,637
Overdraft	<u>1,500</u>	<u>250</u>
	<u>4,365</u>	<u>1,887</u>
Total equity and liabilities	<u>20,633</u>	<u>17,428</u>

Average ratios for the last two years for companies with similar business operations to Wobnig Co are as follows:

Current ratio	1.7 times
Quick ratio	1.1 times
Inventory days	55 days
Trade receivables days	60 days
Trade payables days	85 days
Sales revenue/net working capital	10 times

Required

- (a) Using suitable working capital ratios and analysis of the financial information provided, evaluate whether Wobnig Co can be described as overtrading (undercapitalised). **(12 marks)**
- (b) Critically discuss the similarities and differences between working capital policies in the following areas:
(i) Working capital investment;
(ii) Working capital financing. **(8 marks)**
- (Total = 20 marks)**

81 KXP Co (12/12, amended)

39 mins

KXP Co is an e-business which trades solely over the internet. In the last year the company had sales of \$15 million. All sales were on 30 days' credit to commercial customers.

Extracts from the company's most recent statement of financial position relating to working capital are as follows:

	\$'000
Trade receivables	2,466
Trade payables	2,220
Overdraft	3,000

In order to encourage customers to pay on time, KXP Co proposes introducing an early settlement discount of 1% for payment within 30 days, while increasing its normal credit period to 45 days. It is expected that, on average, 50% of customers will take the discount and pay within 30 days, 30% of customers will pay after 45 days, and 20% of customers will not change their current paying behaviour.

KXP Co currently orders 15,000 units per month of Product Z, demand for which is constant. There is only one supplier of Product Z and the cost of Product Z purchases over the last year was \$540,000. The supplier has offered a 2% discount for orders of Product Z of 30,000 units or more. Each order costs KXP Co \$150 to place and the holding cost is 24 cents per unit per year. KXP Co has an overdraft facility charging interest of 6% per year.

Required

- (a) Calculate the net benefit or cost of the proposed changes in trade receivables policy and comment on your findings. **(5 marks)**
- (b) Calculate whether the bulk purchase discount offered by the supplier is financially acceptable and comment on the assumptions made by your calculation. **(5 marks)**
- (c) Identify and discuss the factors to be considered in determining the optimum level of cash to be held by a company. **(5 marks)**
- (d) Discuss the factors to be considered in formulating a trade receivables management policy. **(5 marks)**
- (Total = 20 marks)**

82 CSZ Co (6/14, amended)

39 mins

The current assets and liabilities of CSZ Co at the end of March 20X4 are as follows:

	\$'000	\$'000
Inventory	5,700	
Trade receivables	6,575	12,275
Trade payables	2,137	
Overdraft	4,682	6,819
Net current assets		5,456

For the year to end of March 20X4, CSZ Co had sales of \$40 million, all on credit, while cost of sales was \$26 million.

For the year to end of March 20X5, CSZ Co has forecast that credit sales will remain at \$40 million while cost of sales will fall to 60% of sales. The company expects current assets to consist of inventory and trade receivables, and current liabilities to consist of trade payables and the company's overdraft.

CSZ Co also plans to achieve the following target working capital ratio values for the year to the end of March 20X5:

Inventory days:	60 days
Trade receivables days:	75 days
Trade payables days:	55 days
Current ratio:	1.4 times

Required

- (a) Calculate the working capital cycle (cash collection cycle) of CSZ Co at the end of March 20X4 and discuss whether a working capital cycle should be positive or negative. (6 marks)
- (b) Calculate the target quick ratio (acid test ratio) and the target ratio of sales to net working capital of CSZ Co at the end of March 20X5. (5 marks)
- (c) Analyse and compare the current asset and current liability positions for March 20X4 and March 20X5, and discuss how the working capital financing policy of CSZ Co would have changed. (9 marks)

(Total = 20 marks)

83 Flit Co (12/14, amended)

39 mins

Flit Co is preparing a cash flow forecast for the three-month period from January to the end of March. The following sales volumes have been forecast:

	December	January	February	March	April
Sales (units)	1,200	1,250	1,300	1,400	1,500

Notes:

- 1 The selling price per unit is \$800 and a selling price increase of 5% will occur in February. Sales are all on one month's credit.
- 2 Production of goods for sale takes place one month before sales.
- 3 Each unit produced requires two units of raw materials, costing \$200 per unit. No raw materials inventory is held. Raw material purchases are on one months' credit.
- 4 Variable overheads and wages equal to \$100 per unit are incurred during production, and paid in the month of production.
- 5 The opening cash balance at 1 January is expected to be \$40,000.
- 6 A long-term loan of \$300,000 will be received at the beginning of March.
- 7 A machine costing \$400,000 will be purchased for cash in March.

Required

- (a) Calculate the cash balance at the end of each month in the three-month period. (5 marks)
- (b) Calculate the forecast current ratio at the end of the three-month period. (2 marks)
- (c) Assuming that Flit Co expects to have a short-term cash surplus during the three-month period, discuss whether this should be invested in shares listed on a large stock market. (3 marks)
- (d) Explain how the Baumol model can be employed to reduce the costs of cash management. (5 marks)
- (e) Renpec Co, a subsidiary of Flit Co, has set a minimum cash account balance of \$7,500. The average cost to the company of making deposits or selling investments is \$18 per transaction and the standard deviation of its cash flows was \$1,000 per day during the last year. The average interest rate on investments is 5.11%.

Determine the spread, the upper limit and the return point for the cash account of Renpec Co using the Miller-Orr model and explain the relevance of these values for the cash management of the company.

(5 marks)

(Total = 20 marks)

84 Widnor Co (6/15, amended)

39 mins

The finance director of Widnor Co has been looking to improve the company's working capital management. Widnor Co has revenue from credit sales of \$26,750,000 per year and although its terms of trade require all credit customers to settle outstanding invoices within 40 days, on average customers have been taking longer. Approximately 1% of credit sales turn into bad debts which are not recovered.

Trade receivables currently stand at \$4,458,000 and Widnor Co has a cost of short-term finance of 5% per year.

The finance director is considering a proposal from a factoring company, Nokfe Co, which was invited to tender to manage the sales ledger of Widnor Co on a with-recourse basis. Nokfe Co believes that it can use its expertise to reduce average trade receivables days to 35 days, while cutting bad debts by 70% and reducing administration costs by \$50,000 per year. A condition of the factoring agreement is that the company would also advance Widnor Co 80% of the value of invoices raised at an interest rate of 7% per year. Nokfe Co would charge an annual fee of 0.75% of credit sales.

Assume that there are 360 days in each year.

Required

- (a) Advise whether the factor's offer is financially acceptable to Widnor Co. (7 marks)
- (b) Briefly discuss how the creditworthiness of potential customers can be assessed. (3 marks)
- (c) Discuss how risks arising from granting credit to foreign customers can be managed and reduced. (10 marks)

(Total = 20 marks)

INVESTMENT APPRAISAL

Questions 85 to 153 cover Investment appraisal, the subject of Part D of the BPP Study Text for Paper F9.

MCQ bank – Investment decisions

39 mins

The following information relates to questions 85 and 86.

NW Co is considering investing \$46,000 in a new delivery lorry that will last for four years, after which time it will be sold for \$7,000. Depreciation is charged on a straight-line basis. Forecast operating profits/(losses) to be generated by the machine are as follows.

Year	\$
1	16,500
2	23,500
3	13,500
4	(1,500)

- 85 What is the return on capital employed (ROCE) for the lorry (using the average investment method)?
- A 70%
B 28%
C 49%
D 36% (2 marks)
- 86 Assuming operational cash flows arise evenly over the year, what is the payback period for this investment (to the nearest month)?
- A 1 year 7 months
B 2 years 7 months
C 1 year 5 months
D 3 years 2 months (2 marks)
- 87 Which of the following are benefits of the return on capital employed method of investment appraisal?
- 1 It considers the whole project
2 It is cash flow based
3 It is a percentage which, being meaningful to non-finance professionals, helps communicate the benefits of investment decisions.
- A 1, 2 and 3
B 1 and 3 only
C 1, and 2 only
D 2 and 3 only (2 marks)
- 88 SW Co has a barrel of chemicals in its warehouse that it purchased for a project a while ago at a cost of \$1,000. It would cost \$400 for a professional disposal company to collect the barrel and dispose of it safely. However, the chemicals could be used in a potential project which is currently being assessed.
- What is the relevant cost of using the chemicals in a new project proposal?
- A \$1,000 cost
B \$400 benefit
C \$400 cost
D Zero (2 marks)

- 89 A new project being considered by BLW Co would require 1,000 hours of skilled labour. The current workforce is already fully employed but more workers can be hired in at a cost of \$20 per hour. The current workers are paid \$15 per hour on a project that earns a contribution of \$10 per hour.

What is the relevant cost of labour to be included in the project appraisal?

- A \$10,000
- B \$15,000
- C \$20,000
- D \$25,000

(2 marks)

- 90 LW Co has a half empty factory on which it pays \$5,000 pa rent. If it takes on a new project, it will have to move to a new bigger factory costing \$17,000 pa and it could rent the old factory out for \$3,000 pa until the end of the current lease.

What is the rental cost to be included in the project appraisal?

- A \$14,000
- B \$17,000
- C \$9,000
- D \$19,000

(2 marks)

- 91 Which of the following is a drawback of the payback period method of investment appraisal?

- A It is cash flow based
- B It considers the time value of money
- C It doesn't measure the potential impact on shareholder wealth
- D It is profit based

(2 marks)

- 92 Which stage is missing or in the wrong order from the investment decision making process below?

- 1 Origination of ideas
 - 2 Financial analysis
 - 3 Implementation
- A Project screening should follow after stage 1
 - B Project screening should follow after stage 2
 - C Raising finance should be before stage 1
 - D Implementation should follow stage 1

(2 marks)

- 93 EE Co is considering investing in a new 40-year project which will require an initial investment of \$50,000 (with zero scrap value) and has a payback period of 20 years. The 40 year project has consistent cash flows each year.

What is the return on capital employed (using the average investment method)?

- A 2.5%
- B 10%
- C 7.5%
- D 5%

(2 marks)

- 94 An accountant is paid \$30,000 per annum and spends two weeks one month working on appraising project Alpha.

Why should the accountant NOT charge half of his month's salary to the project?

- A Because his salary cannot be apportioned
- B Because his salary is not incremental
- C Because his salary is not a cash flow
- D Because his salary is an opportunity cost

(2 marks)

(Total = 20 marks)

MCQ bank – Investment appraisal using DCF

39 mins

- 95 An investor has a cost of capital of 10%. She is due to receive a 5 year annuity starting in 3 year's time of \$7,000 per annum.

What lump sum amount would you need to offer today to make her indifferent between the annuity and your offer?

- A \$26,537
- B \$19,936
- C \$16,667
- D \$21,924

(2 marks)

- 96 A newspaper reader has won first prize in a national competition and they have a choice as to how they take the prize:

Option 1 Take \$90,000 per annum indefinitely starting in 3 years' time (and bequeath this right to their children and so on); or

Option 2 Take a lump sum of \$910,000 in 1 year's time

Assuming a cost of capital of 10%, which would you advise and why?

- A Option 1 because \$90,000 pa indefinitely is an infinite amount of money compared to a one-off payment.
- B Option 1 because it is worth more in present value terms.
- C Option 2 because it is worth more in present value terms.
- D Option 2 because the lump sum has the flexibility to be invested and earn a larger return than \$90,000 pa

(2 marks)

The following information relates to questions 97 and 98.

JCW Co is appraising an opportunity to invest in some new machinery that has the following cash flows.

Initial investment	\$40,000
Net cash inflows for 5 years in advance	\$12,000 per annum
Decommissioning costs after 5 years	\$15,000

- 97 At a cost of capital of 10% what is the net present value of this project (to the nearest \$100)?

- A Negative \$3,800
- B Positive \$14,800
- C Positive \$700
- D Negative \$11,275

(2 marks)

- 98 What is the internal rate of return of the project (to the nearest whole %)?

- A 12
- B 10
- C 14
- D 9

(2 marks)

- 99 Four mutually exclusive projects have been appraised using net present value (NPV), internal rate of return (IRR), return on capital employed (ROCE) and payback period (PP). The company objective is to maximise shareholder wealth.

Which should be chosen?

	NPV	IRR	ROCE	PP
A Project A	\$1m	40%	34%	4 years
B Project B	\$1.1m	24%	35%	2.5 years
C Project C	\$0.9m	18%	25%	3 years
D Project D	\$1.5m	12%	18%	7 years

(2 marks)

- 100 Which TWO of the following are advantages of the internal rate of return (IRR) approach to investment appraisal?

- 1 Clear decision rule
 - 2 Takes into account the time value of money
 - 3 Assumes funds are re-invested at the IRR
 - 4 Considers the whole project
- A 1, 2 and 4 only
 B 2, 3 and 4 only
 C 2 and 4 only
 D 1, 2 and 3 only

(2 marks)

- 101 A project has an initial outflow followed by years of inflows.

What would be the effect on net present value and the internal rate of return of an increase in the cost of capital?

	<i>NPV</i>	<i>IRR</i>	
A	Decrease	Decrease	
B	Increase	Decrease	
C	Decrease	No change	
D	Increase	No change	(2 marks)

- 102 A lease agreement has a net present value of (\$26,496) at a rate of 8%. The lease involves an immediate down payment of \$10,000 followed by four equal annual payments.

What is the amount of the annual payment?

- A \$11,020
 B \$4,981
 C \$11,513
 D \$14,039

(2 marks)

- 103 Which of the following statements about net present value (NPV) and internal rate of return (IRR) is accurate?

- A Two NPV calculations are needed to estimate the IRR using linear interpolation.
- B The graphical approach to IRR is only an estimate; linear interpolation using the formula is required for a precise answer.
- C The IRR is unique.
- D An IRR graph with NPV on the 'Y' axis and discount rate on the 'X' axis will have a negative slope.

(2 marks)

- 104 Paulo plans to buy a holiday villa in five years' time for cash. He estimates the cost will be \$1.5m. He plans to set aside the same amount of funds each year for 5 years, starting immediately and earning a rate of 10% interest per annum compound.

To the nearest \$100, how much does he need to set aside each year?

- A \$223,400
- B \$245,600
- C \$359,800
- D \$395,600

(2 marks)

(Total = 20 marks)

MCQ bank – Allowing for tax and inflation

39 mins

- 105 SW Co has a 31 December year end and pays corporation tax at a rate of 30%, 12 months after the end of the year to which the cash flows relate. It can claim tax allowable depreciation at a rate of 25% reducing balance. It pays \$1m for a machine on 31 December 20X4. SW Co's cost of capital is 10%.

What is the present value on 31 December 20X4 of the benefit of the first portion of tax allowable depreciation?

- A \$250,000
- B \$227,250
- C \$68,175
- D \$75,000

(2 marks)

- 106 A company receives a perpetuity of \$20,000 per annum in arrears, and pays 30% corporation tax 12 months after the end of the year to which the cash flows relate.

At a cost of capital of 10%, what is the after tax present value of the perpetuity?

- A \$140,000
- B \$145,454
- C \$144,000
- D \$127,274

(2 marks)

- 107 A project has the following projected cash inflows.

Year 1	100,000
Year 2	125,000
Year 3	105,000

Working capital is required to be in place at the start of each year equal to 10% of the cash inflow for that year. The cost of capital is 10%.

What is the present value of the working capital?

- A \$ Nil
- B \$(30,036)
- C \$(2,735)
- D \$33,000

(2 marks)

- 108 AW Co needs to have \$100,000 working capital in place immediately for the start of a 2 year project. The amount will stay constant in real terms. Inflation is running at 10% per annum, and AW Co's money cost of capital is 12%.

What is the present value of the cash flows relating to working capital?

- A \$(21,260)
- B \$(20,300)
- C \$(108,730)
- D \$(4,090)

(2 marks)

109 NCW Co is considering investing \$10,000 immediately in a 1 year project with the following cash flows.

Income	\$100,000
Expenses	\$35,000

The cash flows will arise at the end of the year. The above are stated in current terms. Income is subject to 10% inflation; expenses will not vary. The real cost of capital is 8% and general inflation is 2%.

Using the money cost of capital to the nearest whole %, what is the net present value of the project?

- A \$68,175
- B \$60,190
- C \$58,175
- D \$78,175

(2 marks)

110 AM Co will receive a perpetuity starting in 2 years' time of \$10,000 per annum, increasing by the rate of inflation (which is 2%).

What is the present value of this perpetuity assuming a money cost of capital of 10.2%?

- A \$90,910
- B \$125,000
- C \$115,740
- D \$74,403

(2 marks)

111 FW Co is expecting a net of tax receipt of \$10,000 (in real terms) in 1 year's time.

If FW Co expects inflation to increase, what impact will this have on the present value of that receipt?

- A Nil
- B Reduce
- C Increase
- D Cannot say

(2 marks)

112 Shadowline Co has a money cost of capital of 10%. If inflation is 4%, what is Shadowline Co's real cost of capital?

- A 6%
- B 5.8%
- C 14%
- D 14.4%

(2 marks)

113 Juicy Co is considering investing in a new industrial juicer for use on a new contract. It will cost \$150,000 and will last 2 years. Juicy Co pays corporation tax at 30% (as the cash flows occur) and, due to the health benefits of juicing, the machine attracts 100% tax allowable depreciation immediately.

Given a cost of capital of 10%, what is the minimum value of the pre-tax contract revenue receivable in 2 years which would be required to recover the net cost of the juicer?

- A \$150,000
- B \$105,000
- C \$127,050
- D \$181,500

(2 marks)

114 Which of the following is true about the 'inflation' figure that is included in the money cost of capital?

- A It is historic and specific to the business.
- B It is historic general inflation suffered by the investors.
- C It is expected and specific to the business.
- D It is expected general inflation suffered by the investors.

(2 marks)

(Total = 20 marks)

CBE style OTQ bank – Project appraisal and risk

20 mins

115 Which TWO of the following are true in respect of using expected values in net present value calculations?

- Appropriate for one-off events
- Hides risk
- Probably won't actually occur
- Eliminates uncertainty

(2 marks)

116 Sales volumes are expected to be either 20,000 units with 60% probability or they are expected to be 25,000 units. Price will either be \$10 (0.3 probability) or else \$15. Margins are expected to be 30% or 40% of sales with an even chance of each.

What is the expected total cost?

\$

(2 marks)

117 SAC Co has a cost of capital of 8% and is appraising project Gamma. It has the following cash flows.

T0	Investment	100,000
T1-5	Net cash inflow	40,000

What is the adjusted payback period for this project?

- 2.5 years
- Just under 3 years
- 2 years
- Just over 4 years

(2 marks)

118 A project has the following cash flows.

T0	Outflow	\$110,000
T1-4	Inflow	\$40,000

At the company's cost of capital of 10% the NPV of the project is \$16,800.

Applying sensitivity analysis to the cost of capital, what percentage change in the cost of capital would cause the project NPV to fall to zero?

- 70%
- 17%
- 5%
- 41%

(2 marks)

119 What is the main advantage of using simulations to assist in investment appraisal?

- A clear decision rule
- More than one variable can change at a time
- Statistically more accurate than other methods
- Being diagrammatic it is easier to understand

(2 marks)

(Total = 10 marks)

CBE style OTQ bank – Specific investment decisions

39 mins

- 120 PD Co is deciding whether to replace its delivery vans every year or every other year. The initial cost of a van is \$20,000. Maintenance costs would be nil in the first year, and \$5,000 at the end of the second year. Second-hand value would fall from \$10,000 to \$8,000 if it held on to the van for two years instead of just one. PD Co's cost of capital is 10%.

How often should PD Co replace their vans, and what is the annual equivalent cost ('EAC') of that option?

Replace every	EAC (\$)	
<input type="checkbox"/>	1	10,910
<input type="checkbox"/>	1	12,002
<input type="checkbox"/>	2	10,093
<input type="checkbox"/>	2	8,761

(2 marks)

- 121 Which of the following relate to finance leases as opposed to operating leases?

- 1 Maintained and insured by the lessor
- 2 Asset appears on statement of financial position of lessee
- 3 Equipment leased for a shorter period than its expected useful life

<input type="checkbox"/>	2 only	
<input type="checkbox"/>	1 and 2 only	
<input type="checkbox"/>	2 and 3 only	
<input type="checkbox"/>	1 and 3 only	

(2 marks)

- 122 AB Co is considering either leasing an asset or borrowing to buy it, and is attempting to analyse the options by calculating the net present value of each. When comparing the two, AB Co is uncertain whether it should include interest payments in its option to 'borrow and buy' as it is a future, incremental cash flow associated with that option. AB Co is also uncertain which discount rate to use in the net present value calculation for the lease option.

How should AB Co treat the interest payments and what discount rate should it use?

Include Interest?	Discount rate	
<input type="checkbox"/>	Yes	After tax cost of the loan if they borrow and buy
<input type="checkbox"/>	Yes	AB Co's weighted average cost of capital
<input type="checkbox"/>	No	After tax cost of the loan if they borrow and buy
<input type="checkbox"/>	No	AB Co's weighted after cost of capital

(2 marks)

- 123 Which of the following is always true about capital rationing?

	True	False
<input type="checkbox"/>		
<input type="checkbox"/>		

(2 marks)

The following information relates to questions 124 and 125.

NB Co is faced with an immediate capital constraint of \$100 million available to invest.

It is considering investing in 4 divisible projects:

	Initial cost	NPV
	\$m	\$m
Project 1	40	4
Project 2	30	5
Project 3	50	6
Project 4	60	5

- 124 What is the NPV generated from the optimum investment programme?

\$ million

(2 marks)

- 125 What is the NPV generated from the optimum investment programme if the projects were indivisible?

- \$11 million
- \$13 million
- \$6 million
- \$12 million

(2 marks)

- 126 Which of the following is potentially a benefit to the lessee if they lease as opposed to buy?

- Avoiding tax exhaustion
- Attracting lease customers that may not have been otherwise possible
- Exploiting a low cost of capital
- Potential future scrap proceeds

(2 marks)

- 127 A professional kitchen is attempting to choose between gas and electricity for its main heat source. Once a choice is made, the kitchen intends to keep to that source indefinitely. Each gas oven has a net present value (NPV) of \$50,000 over its useful life of 5 years. Each electric oven has an NPV of \$68,000 over its useful life of 7 years. The cost of capital is 8%.

Which should the kitchen choose and why?

- Gas because its average NPV per year is higher than electric
- Electric because its NPV is higher than gas
- Electric because its equivalent annual benefit is higher
- Electric because it lasts longer than gas

(2 marks)

- 128 Which TWO of the following are typically benefits of a shorter replacement cycle?

- Higher scrap value
- Better company image and efficiency
- Lower annual depreciation
- Less time to benefit from owning the asset

(2 marks)

129 Which of the following are potential ways of attempting to deal with a capital constraint?

- 1 Lease
- 2 Joint venture
- 3 Delay one or more of the projects

- 1 and 3 only
- 2 and 3 only
- 1 and 2 only
- 1, 2 and 3

(2 marks)

(Total = 20 marks)

Section B questions

Sensitivity analysis

20 mins

The following scenario relates to questions 130 – 134.

A company is considering a project with the following cash flows.

Year	Initial investment	Variable costs	Cash inflows	Net cash flows
	\$'000	\$'000	\$'000	\$'000
0	(11,000)			(11,000)
1		(3,200)	10,300	7,100
2		(3,200)	10,300	7,100

Cash flows arise from selling 1,030,000 units at \$10 per unit. The company has a cost of capital of 9%.

The net present value (NPV) of the project is \$1,490.

130 What is the sensitivity of the project to changes in sales volume (to 1 dp)?

- A 8.2%
- B 8.4%
- C 11.9%
- D 26.5%

(2 marks)

131 What is the discounted payback of the project?

- A 1.18 years
- B 1.25 years
- C 1.55 years
- D 1.75 years

(2 marks)

132 What is the internal rate of return (IRR) of the project (using discount rates of 15% and 20%)?

- A 19.2%
- B 21.2%
- C 24.2%
- D 44.3%

(2 marks)

133 Are the following statements about sensitivity analysis true or false?

- 1 It provides a decision rule on whether a project should be accepted
 - 2 Its main strength is that it looks at key variables in isolation
-
- A Statement 1 is true and statement 2 is false
 - B Statement 2 is true and statement 1 is false
 - C Both statements are true
 - D Both statements are false

(2 marks)

- 134 Which TWO of the following are true of the internal rate of return (IRR) and the net present value (NPV) methods of appraisal?
- 1 IRR ignores the relative sizes of investments
 - 2 IRR requires a reinvestment assumption which cannot be proven
 - 3 NPV is widely used in practice
 - 4 IRR is technically superior to NPV
- A 1 and 2
 - B 1 and 3
 - C 2 and 4
 - D 3 and 4
- (2 marks)
(Total = 10 marks)

CBE style OT case Trecor Co (Specimen paper 2007, amended)

20 mins

The following scenario relates to questions 135 – 139.

Trecor Co plans to buy a machine costing \$250,000 which will last for four years and then be sold for \$5,000.

Net cash flows before tax are expected to be as follows.

	T_1	T_2	T_3	T_4
Net cash flow \$	122,000	143,000	187,000	78,000

Depreciation is charged on a straight-line basis over the life of an asset.

- 135 The average annual accounting profit is \$71,250.
Calculate the before-tax return on capital employed (accounting rate of return) based on the average investment (to the nearest whole percent).
- (2 marks)
- 136 Are the following statements on return on capital employed (ROCE) true or false?
- | | | |
|--|-------------------------------|--------------------------------|
| If ROCE is less than the target ROCE then the purchase of the machine
can be recommended
ROCE can be used to compare two mutually exclusive projects | <input type="checkbox"/> True | <input type="checkbox"/> False |
|--|-------------------------------|--------------------------------|
- (2 marks)

- 137 Trecor Co can claim tax allowable depreciation on a 25% reducing balance basis. It pays tax at an annual rate of 30% one year in arrears.
- What are the tax benefits which Trecor Co can claim in year 4 (to the nearest whole number)?

\$ (2 marks)

- 138 What is the payback period for the machine (to the nearest whole month)?

year(s) month(s) (2 marks)

139 Which TWO of the following are true of the internal rate of return (IRR)?

- IRR ignores the relative sizes of investments
 - IRR measures the increase in company value
 - IRR can incorporate discount rate changes during the life of the project
 - IRR and NPV sometimes give conflicting rankings over which project should be prioritised
- (2 marks)
(Total = 10 marks)

CBE style OT case BRT Co (6/11, amended)

20 mins

The following scenario relates to questions 140 – 144.

BRT Co has developed a new confectionery line that can be sold for \$5.00 per box and that is expected to have continuing popularity for many years. The Finance Director has proposed that investment in the new product should be evaluated over a four-year time-horizon, even though sales would continue after the fourth year, on the grounds that cash flows after four years are too uncertain to be included.

The variable cost (in current price terms) will depend on sales volume, as follows.

Sales volume (boxes)	less than 1 million	1–1.9 million	2–2.9 million	3–3.9 million
Variable cost (\$ per box)	2.80	3.00	3.00	3.05

Forecast sales volumes are as follows.

Year	1	2	3	4
Demand (boxes)	0.7 million	1.6 million	2.1 million	3.0 million

Tax

Tax-allowable depreciation on a 25% reducing balance basis could be claimed on the cost of equipment. Profit tax of 30% per year will be payable one year in arrears. A balancing allowance would be claimed in the fourth year of operation.

Inflation

The average general level of inflation is expected to be 3% per year for the selling price and variable costs. BRT Co uses a nominal after-tax cost of capital of 12% to appraise new investment projects..

A trainee accountant at BRT Co has started a spreadsheet to calculate the net present value (NPV) of a proposed new project.

	A	B	C	D	E	F	G
1	Year	0	1	2	3	4	5
2		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
3	Inflated sales						
4	Inflated variable costs						
5	Fixed costs		(1,030)	(1,910)	(3,060)	(4,277)	
6	Net cash flow		556	1,485	1,530	2,308	
7	Taxation						
8	Tax benefits						
9	Working capital	(750)	(23)	(23)	(24)	750	
10	Investment	(2,000)					
12	Project cash flows						
13	Discount factor 12%	1.000	0.893	0.797	0.712	0.636	0.567
14	Present value						

140 What is sales figure for Year 2 (cell D3 in the spreadsheet), to the nearest \$'000?

\$ '000

(2 marks)

141 What are the variable costs for Year 3 (E4 in the spreadsheet), to the nearest \$'000?

\$ '000

(2 marks)

142 What are the tax benefits in year 4 (cell F8), to the nearest \$'000?

\$ '000

(2 marks)

143 Which of the following statements about the project appraisal are true/false?

True False

The trainee accountant has used the wrong percentage for the cost of capital

Ignoring sales after four years underestimates the value of the project

The working capital figure in Year 4 is wrong

(2 marks)

144 The trainee accountant at BRT Co has calculated the internal rate of return (IRR) for the project.

Are the following statements true or false?

1 When cash flow patterns are conventional, the NPV and IRR methods will give the same accept or reject decision.

2 The project is financially viable under IRR if it exceeds the cost of capital

Both statements are true

Both statements are false

Statement 1 is true and statement 2 is false

Statement 2 is true and statement 1 is false

(2 marks)

(Total = 10 marks)

Section C questions

145 Calvic Co

39 mins

Calvic Co services custom cars and provides its clients with a courtesy car while servicing is taking place. It has a fleet of 10 courtesy cars which it plans to replace in the near future. Each new courtesy car will cost \$15,000. The trade-in value of each new car declines over time as follows:

Age of courtesy car (years)	1	2	3
Trade-in value (\$/car)	11,250	9,000	6,200

Servicing and parts will cost \$1,000 per courtesy car in the first year and this cost is expected to increase by 40% per year as each vehicle grows older. Cleaning the interior and exterior of each courtesy car to keep it up to the standard required by Calvic's clients will cost \$500 per car in the first year and this cost is expected to increase by 25% per year.

Calvic Co has a cost of capital of 10%. Ignore taxation.

Required

- (a) Using the equivalent annual cost method, calculate whether Calvic Co should replace its fleet after one year, two years, or three years. **(12 marks)**
- (b) Explain how an organisation can determine the best way to invest available capital under capital rationing. Your answer should refer to single-period capital rationing, project divisibility and the investment of surplus funds. **(8 marks)**

(Total = 20 marks)

146 Project E (6/14, amended)

39 mins

Project E is a strategically important project which the Board of OAP Co have decided must be undertaken in order for the company to remain competitive, regardless of its financial acceptability. The project has a life of four years. Information relating to the future cash flows of this project are as follows:

Year	1	2	3	4
Sales volume (units)	12,000	13,000	10,000	10,000
Selling price (\$/unit)	450	475	500	570
Variable cost (\$/unit)	260	280	295	320
Fixed costs (\$'000)	750	750	750	750

These forecasts are before taking into account of selling price inflation of 5.0% per year, variable cost inflation of 6.0% per year and fixed cost inflation of 3.5% per year. The fixed costs are incremental fixed costs which are associated with Project E. At the end of four years, machinery from the project will be sold for scrap with a value of \$400,000. Tax allowable depreciation on the initial investment cost of Project E is available on a 25% reducing balance basis and OAP Co pays corporation tax of 28% per year, one year in arrears. A balancing charge or allowance is available at the end of the fourth year of operation.

OAP Co has a nominal after-tax cost of capital of 13% per year. The initial investment for Project E is \$5,000,000.

Required

- (a) Calculate the nominal after-tax net present value of Project E and comment on the financial acceptability of this project. **(15 marks)**

OAP Co is considering investing \$50,000 in a new machine with an expected life of five years. The machine will have no scrap value at the end of five years. It is expected that 20,000 units will be sold each year at a selling price of \$3.00 per unit. Variable production costs are expected to be \$1.65 per unit, while incremental fixed costs, mainly the wages of a maintenance engineer, are expected to be \$10,000 per year. OAP Co expects investment projects to recover their initial investment within two years.

Required

- (b) Calculate and comment on the payback period of the machine.

(5 marks)

(Total = 20 marks)

147 AGD Co (FMC, 12/05, amended)

39 mins

AGD Co is a profitable company which is considering the purchase of a machine costing \$320,000. If purchased, AGD Co would incur annual maintenance costs of \$25,000. The machine would be used for three years and at the end of this period would be sold for \$50,000. Alternatively, the machine could be obtained under an operating lease for an annual lease rental of \$120,000 per year, payable in advance.

AGD Co can claim tax allowable depreciation on a 25% reducing balance basis. The company pays tax on profits at an annual rate of 30% and all tax liabilities are paid one year in arrears. AGD Co has an accounting year that ends on 31 December. If the machine is purchased, payment will be made in January of the first year of operation. If leased, annual lease rentals will be paid in January of each year of operation.

Required

- (a) Using an after-tax borrowing rate of 7%, evaluate whether AGD Co should purchase or lease the new machine. **(12 marks)**
- (b) Explain and discuss the key differences between an operating lease and a finance lease. **(5 marks)**
- (c) Explain the difference between risk and uncertainty in the context of investment appraisal. **(3 marks)**

(Total = 20 marks)

148 Basril Co (FMC, 12/03, amended)

39 mins

Basril Co is reviewing investment proposals that have been submitted by divisional managers. The investment funds of the company are limited to \$800,000 in the current year. Details of three possible investments, none of which can be delayed, are given below.

Project 1

An investment of \$300,000 in work station assessments. Each assessment would be on an individual employee basis and would lead to savings in labour costs from increased efficiency and from reduced absenteeism due to work-related illness. Savings in labour costs in money terms are expected to be as follows:

Year	1	2	3	4	5
Cash flows (\$'000)	85	90	95	100	95

Project 2

An investment of \$450,000 in individual workstations for staff that is expected to reduce administration costs by \$140,800 per annum in money terms for the next five years.

Project 3

An investment of \$400,000 in new ticket machines. Net cash savings of \$120,000 per annum are expected in current price terms and these are expected to increase by 3.6% per annum due to inflation during the five-year life of the machines.

Basril Co has a money cost of capital of 12% and taxation should be ignored.

Required

Determine the best way for Basril Co to invest the available funds and calculate the resultant NPV:

- (a) on the assumption that each of the three projects is divisible; **(10 marks)**
- (b) on the assumption that none of the projects are divisible.

- (c) Explain how cash shortages can restrict the investment opportunities of a business. (5 marks)
- (d) Discuss the meaning of the term 'relevant cash flows' in the context of investment appraisal, giving examples to illustrate your discussion. (5 marks)
- (Total = 20 marks)

149 Filtrex Co

39 mins

- (a) Filtrex Co is a medium-sized, all equity-financed, unquoted company which specialises in the development and production of water- and air-filtering devices to reduce the emission of effluents. Its small but ingenious R & D team has recently made a technological breakthrough which has revealed a number of attractive investment opportunities. It has applied for patents to protect its rights in all these areas. However, it lacks the financial resources required to exploit all of these projects, whose required outlays and post-tax NPVs are listed in the table below. Filtrex's managers consider that delaying any of these projects would seriously undermine their profitability, as competitors bring forward their own new developments. All projects are thought to have a similar degree of risk.

<i>Project</i>	<i>Required outlay</i>	<i>NPV</i>
	\$	\$
A	150,000	65,000
B	120,000	50,000
C	200,000	80,000
D	80,000	30,000
E	400,000	120,000

The NPVs have been calculated using as a discount rate the 18% post-tax rate of return which Filtrex requires for risky R & D ventures. The maximum amount available for this type of investment is \$400,000, corresponding to Filtrex's present cash balances, built up over several years' profitable trading. Projects A and C are mutually exclusive and no project can be sub-divided. Any unused capital will either remain invested in short-term deposits or used to purchase marketable securities, both of which offer a return well below 18% post-tax.

Required

- (i) Advise Filtrex Co, using suitable supporting calculations, which combination of projects should be undertaken in the best interests of shareholders; and (9 marks)
- (ii) Suggest what further information might be obtained to assist a fuller analysis. (9 marks)
- (b) Explain how, apart from delaying projects, Filtrex Co could manage to exploit more of these opportunities. (6 marks)
- (c) Distinguish between hard and soft capital rationing, explaining why a company may deliberately choose to restrict its capital expenditure. (5 marks)

(Total = 20 marks)

150 Warden Co (12/11, amended)

39 mins

Warden Co plans to buy a new machine. The cost of the machine, payable immediately, is \$800,000 and the machine has an expected life of five years. Additional investment in working capital of \$90,000 will be required at the start of the first year of operation. At the end of five years, the machine will be sold for scrap, with the scrap value expected to be 5% of the initial purchase cost of the machine. The machine will not be replaced.

Production and sales from the new machine are expected to be 100,000 units per year. Each unit can be sold for \$16 per unit and will incur variable costs of \$11 per unit. Incremental fixed costs arising from the operation of the machine will be \$160,000 per year.

Warden Co has an after-tax cost of capital of 11% which it uses as a discount rate in investment appraisal. The company pays profit tax one year in arrears at an annual rate of 30% per year. Tax allowable depreciation and inflation should be ignored.

Required

- (a) Calculate the net present value of investing in the new machine and advise whether the investment is financially acceptable. **(8 marks)**
- (b) Calculate the internal rate of return of investing in the new machine and advise whether the investment is financially acceptable. **(4 marks)**
- (c) (i) Explain briefly the meaning of the term 'sensitivity analysis' in the context of investment appraisal. **(2 marks)**
- (ii) Using the IRR you calculated in part (b), calculate the sensitivity of the investment in the new machine to a change in selling price and to a change in discount rate, and comment on your findings. **(6 marks)**
- (Total = 20 marks)**

151 BQK Co (12/12, amended)

39 mins

BQK Co, a house-building company, plans to build 100 houses on a development site over the next four years. The purchase cost of the development site is \$4,000,000, payable at the start of the first year of construction. Two types of house will be built, with annual sales of each house expected to be as follows:

Year	1	2	3	4
Number of small houses sold:	15	20	15	5
Number of large houses sold:	7	8	15	15

Houses are built in the year of sale. Each customer finances the purchase of a home by taking out a long-term personal loan from their bank. Financial information relating to each type of house is as follows:

	<i>Small house</i>	<i>Large house</i>
Selling price:	\$200,000	\$350,000
Variable cost of construction:	\$100,000	\$200,000

Selling prices and variable cost of construction are in current price terms, before allowing for selling price inflation of 3% per year and variable cost of construction inflation of 4.5% per year.

Fixed infrastructure costs of \$1,500,000 per year in current price terms would be incurred. These would not relate to any specific house, but would be for the provision of new roads, gardens, drainage and utilities. Infrastructure cost inflation is expected to be 2% per year.

BQK Co pays profit tax one year in arrears at an annual rate of 30%. The company can claim tax allowable depreciation on the purchase cost of the development site on a straight-line basis over the four years of construction.

BQK Co has a real after-tax cost of capital of 9% per year and a nominal after-tax cost of capital of 12% per year. New investments are required by the company to have a before-tax return on capital employed (accounting rate of return) on an average investment basis of 20% per year.

Required

- (a) Calculate the net present value of the proposed investment and comment on its financial acceptability. Work to the nearest \$1,000. **(13 marks)**
- (b) Discuss the effect of a substantial rise in interest rates on the financing cost of BQK Co and its customers, and on the capital investment appraisal decision-making process of BQK Co. **(7 marks)**
- (Total = 20 marks)**

152 Uftin Co (12/14, amended)

39 mins

Uftin Co is a large company which is listed on a major stock market. The company has been evaluating an investment proposal to manufacture Product K3J. The initial investment of \$1,800,000 will be payable at the start of the first year of operation. The following draft evaluation has been prepared by a junior employee.

Year	1	2	3	4
Sales (units/year)	95,000	100,000	150,000	150,000
Selling price (\$/unit)	25	25	26	27
Variable costs (\$/unit)	11	12	12	13

(Note: The above selling prices and variable costs per unit have not been inflated.)

	\$'000	\$'000	\$'000	\$'000
Sales revenue	2,475	2,605	4,064	4,220
Variable costs	(1,097)	(1,260)	(1,890)	(2,048)
Fixed costs	(155)	(155)	(155)	(155)
Interest payments	(150)	(150)	(150)	(150)
Cash flow before tax	1,073	1,040	1,869	1,867
Tax allowable depreciation	(450)	(450)	(450)	(450)
Taxable profit	623	590	1,419	1,417
Taxation		(137)	(130)	(312)
Net cash flow	623	453	1,289	1,105
Discount at 12%	0.893	0.797	0.712	0.636
Present values	556	361	918	703
	\$'000			
Present value of cash inflows	2,538			
Cost of machine	(1,800)			
NPV	738			

The junior employee also provided the following information:

- 1 Relevant fixed costs are forecast to be \$150,000 per year.
- 2 Sales and production volumes are the same and no finished goods inventory is held.
- 3 The corporation tax rate is 22% per year and tax liabilities are payable one year in arrears.
- 4 Uftin Co can claim tax allowable depreciation of 25% per year on a reducing balance basis on the initial investment.
- 5 A balancing charge or allowance can be claimed at the end of the fourth year.
- 6 It is expected that selling price inflation will be 4.2% per year, variable cost inflation will be 5% per year and fixed cost inflation will be 3% per year.
- 7 The investment has no scrap value.
- 8 The investment will be partly financed by a \$1,500,000 loan at 10% per year.
- 9 Uftin Co has a weighted average cost of capital of 12% per year.

Required

- (a) Prepare a revised draft evaluation of the investment proposal and comment on its financial acceptability. (11 marks)
 - (b) Explain any TWO revisions you have made to the draft evaluation in part (a) above. (4 marks)
 - (c) Discuss TWO ways of incorporating risk into the investment appraisal process. (5 marks)
- (Total = 20 marks)

153 Hraxin Co (6/15, amended)

39 mins

Hraxin Co is appraising an investment project which has an expected life of four years and which will not be repeated. The initial investment, payable at the start of the first year of operation, is \$5 million. Scrap value of \$500,000 is expected to arise at the end of four years.

There is some uncertainty about what price can be charged for the units produced by the investment project, as this is expected to depend on the future state of the economy. The following forecast of selling prices and their probabilities has been prepared:

Future economic state	Weak	Medium	Strong
Probability of future economic state	35%	50%	15%
Selling price in current price terms	\$25 per unit	\$30 per unit	\$35 per unit

These selling prices are expected to be subject to annual inflation of 4% per year, regardless of which economic state prevails in the future.

Forecast sales and production volumes, and total nominal variable costs, have already been forecast, as follows:

Year	1	2	3	4
Sales and production (units)	150,000	250,000	400,000	300,000
Nominal variable cost (\$'000)	2,385	4,200	7,080	5,730

Incremental overheads of \$400,000 per year in current price terms will arise as a result of undertaking the investment project. A large proportion of these overheads relate to energy costs which are expected to increase sharply in the future because of energy supply shortages, so overhead inflation of 10% per year is expected.

The initial investment will attract tax-allowable depreciation on a straight-line basis over the four-year project life. The rate of corporation tax is 30% and tax liabilities are paid in the year in which they arise. Hraxin Co has traditionally used a nominal after-tax discount rate of 11% per year for investment appraisal.

Required

- (a) Calculate the expected net present value of the investment project and comment on its financial acceptability. (9 marks)
 - (b) Distinguish between risk and uncertainty and briefly explain why they should be considered in the investment appraisal process. (5 marks)
 - (c) Critically discuss if sensitivity analysis will assist Hraxin Co in assessing the risk of the investment project. (6 marks)
- (Total = 20 marks)**

BUSINESS FINANCE

Questions 154 to 206 cover Business Finance, the subject of Part E of the BPP Study Text for Paper F9.

MCQ bank – Sources of finance

20 mins

- 154 Businesses often use loans or overdrafts or both as a source of finance.

Which of the following is a benefit, to the borrower, of a loan as opposed to an overdraft?

- A Flexible repayment schedule
- B Only charged for the amount drawn down
- C Easy to arrange
- D Lower interest rates

(2 marks)

- 155 According to the creditor hierarchy, list the following from high risk to low risk:

- 1 Ordinary share capital
- 2 Preference share capital
- 3 Trade payables
- 4 Bank loan with fixed and floating charges

- A 1,2,3,4
- B 2,1,4,3
- C 1,2,4,3
- D 4,1,2,3

(2 marks)

- 156 Alpha is a listed company with a share price of \$2 per share. It announces a 1-for-4 rights issue at \$1.60 per share.

What is the theoretical ex-rights price?

- A \$2.40
- B \$1.80
- C \$1.68
- D \$1.92

(2 marks)

- 157 Which one of the following is issued at a discount to its redemption value and pays its holder no interest during its life?

- A A deep discount bond
- B A long-term bond issued by the government
- C An unsecured loan note
- D A zero coupon bond

(2 marks)

- 158 Which of the following describes a sukuk?

- A A bond in Islamic finance where the lender owns the underlying asset and shares in the risks and rewards of ownership.
- B Equity in Islamic finance where profits are shared according to a pre agreed contract – dividends are not paid as such.
- C Trade credit in Islamic finance where a pre agreed mark up is agreed in advance for the convenience of paying later.
- D A lease in Islamic finance where the lessor retains ownership and the risk and rewards of ownership of the underlying asset.

(2 marks)

(Total = 10 marks)

MCQ bank – Dividend policy

20 mins

159 Which of the following are assumptions for Modigliani and Miller's dividend irrelevance theory?

- 1 Perfect capital markets
 - 2 No taxes or tax preferences
 - 3 No transaction costs
 - 4 No inflation
- A 1,2,3 only
 - B 1,2,4 only
 - C 2,3,4 only
 - D 1,2,3,4

(2 marks)

160 Which of the below best describes the signalling effect of dividend policy/announcements?

- A It indicates future dividend patterns.
- B A dividend that is different from investor expectations highlights information about the business to the investors.
- C It flags reported financial results to follow.
- D It indicates poor cash flow health.

(2 marks)

161 In Modigliani & Miller's dividend irrelevance theory, the process of 'manufacturing dividends' refers to which of the following?

- A Dividends from manufacturing businesses.
- B Investors selling some shares to realise some capital gain.
- C Creative accounting to allow dividends to be paid.
- D Investing plans designed to create regular returns to shareholders.

(2 marks)

162 What does an enhanced scrip dividend mean?

- A In addition to the scrip dividend cash is also paid
- B Bonus shares are paid in return for accepting a delay
- C More than \$1 worth of shares is offered as an alternative to every \$1 cash dividend to be paid
- D A higher scrip dividend is offered to a limited shareholder group.

(2 marks)

163 Three companies (Sun Co, Moon Co and Nite Co) have the following dividend payments history:

Company	20X1	20X2	20X3
Sun Co – Dividend	100	110	121
Sun Co – Earnings	200	200	201
Moon Co – Dividend	50	150	25
Moon Co – Earnings	100	300	50
Nite Co – Dividend	nil	300	nil
Nite Co – Earnings	400	350	500

Which best describes their apparent dividend policies?

- | | Sun Co | Moon Co | Nite Co |
|---|------------------|------------------|------------------|
| A | Constant growth | Constant pay-out | Residual |
| B | Constant pay-out | Constant growth | Residual |
| C | High pay-out | Residual | Constant pay-out |
| D | Constant growth | Residual | Constant pay-out |

(2 marks)

(Total = 10 marks)

MCQ bank – Gearing and capital structure

39 mins

- 164 A summary of HM Co's recent statement of profit or loss is given below:

	\$'000
Revenue	10,123
Cost of sales	<u>(7,222)</u>
Gross profit	2,901
Expenses	<u>(999)</u>
Profit before interest and tax	1,902
Interest	<u>(1,000)</u>
Tax	<u>(271)</u>
Profit after interest and tax	<u>631</u>

70% of cost of sales and 10% of expenses are variable costs.

What is HM Co's operational gearing?

- A 7.87
- B 0.71
- C 2.61
- D 0.40

(2 marks)

- 165 The following is an extract of ELW's statement of financial position.

	\$m	\$m
Total assets		<u>1,000</u>
\$1 Ordinary share capital	100	
Retained earnings	<u>400</u>	
Total equity	500	
Loan notes	500	
		<u>1,000</u>

The ordinary shares are currently quoted at \$5.50, and loan notes are trading at \$125 per \$100 nominal.

What is ELW's financial gearing ratio (debt/debt+equity) using market values?

- A 40%
- B 56%
- C 57%
- D 53%

(2 marks)

- 166 Who suffers financial risk as financial gearing increases, and why?

- A Lenders because they are less likely to be repaid.
- B Lenders because there are fewer assets to offer as security.
- C Shareholders as their returns are lower.
- D Shareholders as their dividends become more variable.

(2 marks)

- 167 AB Co has an interest cover greater than one and gearing (debt/debt + equity) of 50%.

What will be the impact on interest cover and gearing of issuing shares to repay half the debt?

	Interest cover	Gearing	
A	Rise	Rise	
B	Rise	Fall	
C	Fall	Rise	
D	Fall	Fall	

(2 marks)

- 168 All else being equal, a poor set of results and lower dividends that aren't as bad as shareholders were expecting would probably have the following impact:

P/E ratio	Dividend yield	
A Increase	Increase	
B Increase	Decrease	
C Decrease	Increase	
D Decrease	Decrease	(2 marks)

- 169 The following statements relate to small and medium sized enterprises (SMEs).

- 1 SMEs are restricted in sources of new equity
- 2 A potential source of financing for SMEs is venture capital.

Are the statements true or false?

- A Statement 1 is true and statement 2 is false
 - B Statement 2 is true and statement 1 is false
 - C Both statements are true
 - D Both statements are false
- (2 marks)

- 170 Which of the following are handicaps that young SMEs face in accessing funds?

- 1 Uncertainty and risk for lenders
 - 2 Financial statements are not sufficiently detailed
 - 3 Shares cannot be placed privately
- A 1 and 3 only
 - B 1 and 2 only
 - C 2 and 3 only
 - D 1, 2 and 3

(2 marks)

- 171 The following statements relate to small and medium sized enterprises (SMEs).

- 1 Medium term loans are harder to obtain than longer term loans for SMEs.
- 2 SMEs are prone to funding gaps.

Are the statements true or false?

- A Statement 1 is true and statement 2 is false
 - B Statement 2 is true and statement 1 is false
 - C Both statements are true
 - D Both statements are false
- (2 marks)

- 172 Private individuals or groups of individuals can invest directly into a small business.

What is this known as?

- A Reverse factoring
 - B Supply chain finance
 - C Venture capital
 - D Business angel financing
- (2 marks)

- 173 The following statements relate to supply chain finance (SCF).

- 1 SCF is considered to be financial debt.
- 2 SCF allows an SME to raise finance at a lower interest rate than would normally be available to it.

Are the statements true or false?

- A Statement 1 is true and statement 2 is false
 - B Statement 2 is true and statement 1 is false
 - C Both statements are true
 - D Both statements are false
- (2 marks)

(Total = 20 marks)

CBE style OTQ bank – The cost of capital

39 mins

- 174 GG Co has a cost of equity of 25%. It has 4 million shares in issue, and has done for many years.

Its dividend payments in the years 20X9 to 20Y3 were as follows.

<i>End of year</i>	<i>Dividends</i>
	\$'000
20X9	220
20Y0	257
20Y1	310
20Y2	356
20Y3	423

Dividends are expected to continue to grow at the same average rate into the future.

According to the dividend valuation model, what should be the share price at the start of 20Y4?

- \$0.96
- \$1.10
- \$1.47
- \$1.73

(2 marks)

- 175 IPA Co is about to pay a \$0.50 dividend on each ordinary share. Its earnings per share was \$1.50.

Net assets per share is \$6. Current share price is \$4.50 per share.

What is the cost of equity (to the nearest whole percent)?

%

(2 marks)

- 176 Which of the following best describes systematic risk?

- The chance that automated processes may fail
- The risk associated with investing in equity
- The diversifiable risk associated with investing in equity
- The residual risk associated with investing in a well-diversified portfolio.

(2 marks)

- 177 A share in MS Co has an equity beta of 1.3. MS Co's debt beta is 0.1. It has a gearing ratio of 20% (debt:equity). The market premium is 8% and the risk free rate is 3%. MS Co pays 30% corporation tax.

What is the cost of equity for MS Co?

%

(2 marks)

- 178 HB Co has in issue 10% irredeemable loan notes, currently traded at 95% cum-interest.

If the tax rate changes from 30% to 20% for the company, what will happen to the cost of irredeemable debt?

- Increases to 9.4%
- Increases to 8.4%
- Decreases to 9.4%
- Decreases to 8.4%

(2 marks)

- 179 BRW Co has 10% redeemable loan notes in issue trading at \$90. The loan notes are redeemable at a 10% premium in 5 years' time, or convertible at that point into 20 ordinary shares. The current share price is \$2.50 and is expected to grow at 10% per annum for the foreseeable future. BRW Co pays 30% corporation tax.

What is the best estimate of the cost of these loan notes?

- 9.8%
- 7.9%
- 11.5%
- 15.2%

(2 marks)

- 180 IDO Co has a capital structure as follows.

	\$m
10m \$0.50 ordinary shares	5
Reserves	20
13% Irredeemable loan notes	<u>7</u>
	<u>32</u>

The ordinary shares are currently quoted at \$3.00, and the loan notes at \$90. IDO Co has a cost of equity of 12% and pays corporation tax at a rate of 30%.

What is IDO Co's weighted average cost of capital?

- 10.4%
- 11.1%
- 11.7%
- 11.8%

(2 marks)

- 181 Which of the following are assumed if a company's current weighted average cost of capital (WACC) is to be used to appraise a potential project?

- 1 Capital structure will remain unchanged for the duration of the project
- 2 The business risk of the project is the same as the current business operations
- 3 The project is relatively small in size

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

(2 marks)

- 182 Which of the following assumptions is not required when using the capital asset pricing model to estimate the cost of equity for project appraisal?

- Efficient capital markets
- Well diversified investors
- Future periods are consistent with the present
- Companies are well diversified

(2 marks)

- 183 An 8% irredeemable \$0.50 preference share is being traded for \$0.30 cum-div currently in a company that pays corporation tax at a rate of 30%.

What is the cost of capital for these preference shares?

- 10.8%
- 15.4%
- 26.7%
- 18.7%

(2 marks)

(Total = 20 marks)

CBE style OTQ bank – Capital structure

39 mins

- 184 Alf Co's gearing is 1:1 debt : equity. The industry average is 1:5. Alf Co is looking to raise finance for investment in a new project and it is wondering whether to raise debt or equity.

Applying the traditional view, which of the following is true?

- It should take on debt finance, as to do so will save tax.
- It should take on equity finance, as their gearing is probably beyond optimal.
- It doesn't matter, as it won't affect the returns the projects generate.
- More information is needed before a decision can be made.

(2 marks)

- 185 Why do Modigliani-Miller (with tax) assume increased gearing will reduce the weighted average cost of capital (WACC)?

- Debt is cheaper than equity.
- Interest payments are tax deductible.
- Reduced levels of expensive equity capital will reduce the WACC.
- Financial risk is not pronounced at moderate borrowing levels.

(2 marks)

- 186 SD Co increased its gearing and its weighted average cost of capital was reduced.

Which TWO of the following theories might explain this?

- Modigliani-Miller (with tax)
- The traditional view
- Pecking order theory
- Modigliani-Miller (no tax)

(2 marks)

- 187 Director A believes there is an optimal balance of debt : equity whereas director B does not believe that the gearing decision affects the value of the business.

Which theories are the directors subscribing to?

- | Director A | Director B |
|---|------------------|
| <input type="checkbox"/> MM (with tax) | MM (no tax) |
| <input type="checkbox"/> Traditional view | MM (no tax) |
| <input type="checkbox"/> Traditional view | MM (with tax) |
| <input type="checkbox"/> MM (no tax) | Traditional view |

(2 marks)

- 188 Pecking order theory suggests finance should be raised in which order?

- Internal funds, rights issue, debt
- Internal funds, debt, new equity
- Debt, internal funds, new equity
- Rights issue, internal funds, debt

(2 marks)

The following information relates to questions 189 and 190.

TR Co has a gearing level of 1:3 debt : equity. TR is considering diversifying into a new market. B Co is already operating in the new market. B Co has an equity beta of 1.05 and a gearing level of 1:4 debt : equity. Both companies pay 30% corporation tax.

- 189 What is the asset beta relevant to TR for the new market (to 2 dp)?

(2 marks)

- 195 During the year IML Co paid a dividend of 15c per share. At the year-end share price was \$3.15. Share price was \$2.50 at the start of the year.

What is the total shareholder return over the period?

%

(2 marks)

- 196 Calculate the equity beta of IML Co, assuming its required annual rate of return on equity is 17% and the stock market uses the capital asset pricing model to calculate the equity beta.

(2 marks)

- 197 Which TWO of the following statements are true?

- If IML Co's share price moved at three times the market rate, its equity beta factor would be 3.0
 The beta factor of IML Co indicates the level of unsystematic risk
 The higher the level of systematic risk, the lower the required rate of return by IML Co
 IML Co wants a return on a project to exceed the risk-free rate

(2 marks)

- 198 Are the following statements true or false?

True False

CAPM assumes that investors in IML Co hold a fully diversified portfolio

If IML Co has a low price/earnings ratio, CAPM is unable to forecast returns accurately

(2 marks)

(Total = 10 marks)

Section C questions

199 Bar Co (12/11, amended)

39 mins

Bar Co is a stock exchange listed company that is concerned by its current level of debt finance. It plans to make a rights issue and to use the funds raised to pay off some of its debt. The rights issue will be at a 20% discount to its current ex-dividend share price of \$7.50 per share and Bar Co plans to raise \$90 million. Bar Co believes that paying off some of its debt will not affect its price/earnings ratio, which is expected to remain constant.

Statement of profit or loss information

	\$m
Revenue	472
Cost of sales	<u>423</u>
Profit before interest and tax	49
Interest	10
Profit before tax	39
Tax	<u>12</u>
Profit after tax	<u>27</u>

Statement of financial position information

	\$m
Equity	
Ordinary shares (\$1 nominal)	60
Retained earnings	<u>80</u>
	140
Long-term liabilities	
8% bonds (\$100 nominal)	<u>125</u>
	<u>265</u>

The 8% bonds are currently trading at \$112.50 per \$100 bond and bondholders have agreed that they will allow Bar Co to buy back the bonds at this market value. Bar Co pays tax at a rate of 30% per year.

Required

- (a) Calculate the theoretical ex rights price per share of Bar Co following the rights issue. **(3 marks)**
- (b) Calculate and discuss whether using the cash raised by the rights issue to buy back bonds is likely to be financially acceptable to the shareholders of Bar Co, commenting in your answer on the belief that the current price/earnings ratio will remain constant. **(7 marks)**
- (c) Calculate and discuss the effect on the financial risk of Bar Co of using the cash raised by the rights issue to buy back bonds, as measured by its interest coverage ratio and its book value debt to equity ratio. **(4 marks)**
- (d) Discuss the dangers to a company of a high level of gearing, including in your answer an explanation of the following terms:
 - (i) Business risk;
 - (ii) Financial risk. **(6 marks)**

(Total = 20 marks)

200 YGV Co (6/10, amended)

39 mins

YGV Co is a listed company selling computer software. Its profit before interest and tax has fallen from \$5 million to \$1 million in the last year and its current financial position is as follows:

	\$'000	\$'000
Non-current assets		
Property, plant and equipment	3,000	
Intangible assets	<u>8,500</u>	11,500
Current assets		
Inventory	4,100	
Trade receivables	<u>11,100</u>	15,200
Total assets		<u>26,700</u>
Equity		
Ordinary shares	10,000	
Reserves	<u>7,000</u>	17,000
Current liabilities		
Trade payables	5,200	
Overdraft	<u>4,500</u>	9,700
Total equity and liabilities		<u>26,700</u>

YGV Co has been advised by its bank that the current overdraft limit of \$4.5 million will be reduced to \$500,000 in two months' time. The finance director of YGV Co has been unable to find another bank willing to offer alternative overdraft facilities and is planning to issue bonds on the stock market in order to finance the reduction of the overdraft. The bonds would be issued at their nominal value of \$100 per bond and would pay interest of 9% per year, payable at the end of each year. The bonds would be redeemable at a 10% premium to their nominal value after 10 years. The finance director hopes to raise \$4 million from the bond issue.

The ordinary shares of YGV Co have a nominal value of \$1.00 per share and a current market value of \$4.10 per share. The cost of equity of YGV Co is 12% per year and the current interest rate on the overdraft is 5% per year. Taxation is at an annual rate of 30%.

Other financial information:

Average gearing of sector (debt/equity, market value basis):	10%
Average interest coverage ratio of sector:	8 times

Required

- (a) Calculate the after-tax cost of debt of the 9% bonds. (4 marks)
- (b) Calculate the effect of using the bond issue to finance the reduction in the overdraft on:
- the interest coverage ratio;
 - gearing (debt/equity, market value basis). (4 marks)
- (c) Evaluate the proposal to use the bond issue to finance the reduction in the overdraft and discuss alternative sources of finance that could be considered by YGV Co, given its current financial position. (12 marks)
- (Total = 20 marks)

201 NN Co (12/10, amended)

39 mins

	\$m	\$m	\$m
Assets			
Non-current assets			101
Current assets			
Inventory	11		
Trade receivables	21		
Cash	10		
		42	
Total assets			<u>143</u>
Equity and liabilities			
Ordinary share capital		50	
Preference share capital		25	
Retained earnings		19	
Total equity			94
Non-current liabilities			
Long-term borrowings		20	
Current liabilities			
Trade payables	22		
Other payables	7		
Total current liabilities		29	
Total liabilities			49
Total equity and liabilities			<u>143</u>

NN Co has a cost of equity of 12%. The ordinary shares of the company have a nominal value of 50 cents per share and an ex div market value of \$8.30 per share.

The long-term borrowings of NN Co consist of 7% bonds that are redeemable in six years' time at their nominal value of \$100 per bond. The current ex interest market price of the bonds is \$103.50.

The preference shares of NN Co have a nominal value of 50 cents per share and pay an annual dividend of 8%. The ex div market value of the preference shares is 67 cents per share.

NN Co pay profit tax at an annual rate of 25% per year.

Required

- (a) Calculate the after-tax cost of debt of NN Co. (4 marks)
- (b) Calculate the weighted average after-tax cost of capital of NN Co. (6 marks)
- (c) Discuss the factors to be considered in formulating the dividend policy of a stock-exchange listed company. (10 marks)
- (Total = 20 marks)

202 AQR Co (6/11, amended)

39 mins

The finance director of AQR Co has heard that the market value of the company will increase if the weighted average cost of capital of the company is decreased. The company, which is listed on a stock exchange, has 100 million shares in issue and the current ex div ordinary share price is \$2.50 per share. AQR Co also has in issue bonds with a book value of \$60 million and their current ex interest market price is \$104 per \$100 bond. The current after-tax cost of debt of AQR Co is 7% and the tax rate is 30%.

The recent dividends per share of the company are as follows.

Year	20X0	20X1	20X2	20X3	20X4
Dividend per share (cents)	19.38	20.20	20.41	21.02	21.80

The finance director proposes to decrease the weighted average cost of capital of AQR Co, and hence increase its market value, by issuing \$40 million of bonds at their nominal value of \$100 per bond. These bonds would pay annual interest of 8% before tax and would be redeemed at a 5% premium to nominal value after 10 years.

Required

- (a) Calculate the market value after-tax weighted average cost of capital of AQR Co in the following circumstances:
- (i) before the new issue of bonds takes place;
 - (ii) after the new issue of bonds takes place.
- Comment on your findings. (12 marks)
- (b) Discuss the director's view that issuing traded bonds will decrease the weighted average cost of capital of AQR Co and thereby increase the market value of the company. (8 marks)
- (Total = 20 marks)**

203 BKB Co (12/12, amended)

39 mins

The statement of financial position of BKB Co provides the following information:

	\$m	\$m
Equity finance		
Ordinary shares (\$1 nominal value)	25	
Reserves	15	40
Non-current liabilities		
7% Convertible bonds (\$100 nominal value)	20	
5% Preference shares (\$1 nominal value)	10	30
Current liabilities		
Trade payables	10	
Overdraft	15	25
Total liabilities		<u>95</u>

BKB Co has an equity beta of 1.2 and the ex-dividend market value of the company's equity is \$125 million. The ex-interest market value of the convertible bonds is \$21 million and the ex-dividend market value of the preference shares is \$6.25 million.

The convertible bonds of BKB Co have a conversion ratio of 19 ordinary shares per bond. The conversion date and redemption date are both on the same date in five years' time. The current ordinary share price of BKB Co is expected to increase by 4% per year for the foreseeable future.

The overdraft has a variable interest rate which is currently 6% per year and BKB Co expects this to increase in the near future. The overdraft has not changed in size over the last financial year, although one year ago the overdraft interest rate was 4% per year. The company's bank will not allow the overdraft to increase from its current level.

The equity risk premium is 5% per year and the risk-free rate of return is 4% per year. BKB Co pays profit tax at an annual rate of 30% per year.

Required

- (a) Calculate the market value after-tax weighted average cost of capital of BKB Co, explaining clearly any assumptions you make. **(12 marks)**
- (b) Discuss why market value weighted average cost of capital is preferred to book value weighted average cost of capital when making investment decisions. **(4 marks)**
- (c) Discuss the attractions to a company of convertible debt compared to a bank loan of a similar maturity as a source of finance. **(4 marks)**

(Total = 20 marks)

204 Fence Co (6/14, amended)

39 mins

The equity beta of Fence Co is 0.9 and the company has issued 10 million ordinary shares. The market value of each ordinary share is \$7.50. The company is also financed by 7% bonds with a nominal value of \$100 per bond, which will be redeemed in seven years' time at nominal value. The bonds have a total nominal value of \$14 million. Interest on the bonds has just been paid and the current market value of each bond is \$107.14.

Fence Co plans to invest in a project which is different to its existing business operations and has identified a company in the same business area as the project, Hex Co. The equity beta of Hex Co is 1.2 and the company has an equity market value of \$54 million. The market value of the debt of Hex Co is \$12 million.

The risk-free rate of return is 4% per year and the average return on the stock market is 11% per year. Both companies pay corporation tax at a rate of 20% per year.

Required

- (a) Calculate the current weighted average cost of capital of Fence Co. **(7 marks)**
- (b) Calculate a cost of equity which could be used in appraising the new project. **(4 marks)**
- (c) Explain the difference between systematic and unsystematic risk in relation to portfolio theory and the capital asset pricing model. **(4 marks)**
- (d) Explain the limitations of the capital asset pricing model. **(5 marks)**

(Total = 20 marks)

205 Tinep Co (12/14, amended)

39 mins

Tinep Co is planning to raise funds for an expansion of existing business activities and in preparation for this the company has decided to calculate its weighted average cost of capital. Tinep Co has the following capital structure:

	\$m	\$m
Equity		
Ordinary shares	200	
Reserves	<u>650</u>	
		850
Non-current liabilities		
Loan notes	200	
		<u>1,050</u>

The ordinary shares of Tinep Co have a nominal value of 50 cents per share and are currently trading on the stock market on an ex dividend basis at \$5.85 per share. Tinep Co has an equity beta of 1.15.

The loan notes have a nominal value of \$100 and are currently trading on the stock market on an ex interest basis at \$103.50 per loan note. The interest on the loan notes is 6% per year before tax and they will be redeemed in six years' time at a 6% premium to their nominal value.

The risk-free rate of return is 4% per year and the equity risk premium is 6% per year. Tinep Co pays corporation tax at an annual rate of 25% per year.

Required

- (a) Calculate the market value weighted average cost of capital and the book value weighted average cost of capital of Tinep Co, and comment briefly on any difference between the two values. **(9 marks)**
- (b) Discuss the factors to be considered by Tinep Co in choosing to raise funds via a rights issue. **(6 marks)**
- (c) Explain the nature of a scrip (share) dividend and discuss the advantages and disadvantages to a company of using scrip dividends to reward shareholders. **(5 marks)**

(Total = 20 marks)

206 Grenarp Co (6/15, amended)

39 mins

Grenarp Co is planning to raise \$11,200,000 through a rights issue. The new shares will be offered at a 20% discount to the current share price of Grenarp Co, which is \$3.50 per share. The rights issue will be on a 1 for 5 basis and issue costs of \$280,000 will be paid out of the cash raised. The capital structure of Grenarp Co is as follows:

	\$m	\$m
Equity		
Ordinary shares	10	
Reserves	<u>75</u>	
		85
Non-current liabilities		
Loan notes	30	
	<u>115</u>	

The net cash raised by the rights issue will be used to redeem part of the loan note issue. Each loan note has a nominal value of \$100 and an ex interest market value of \$104. A clause in the bond issue contract allows Grenarp Co to redeem the loan notes at a 5% premium to market price at any time prior to their redemption date. The price/earnings ratio of Grenarp Co is not expected to be affected by the redemption of the loan notes.

The earnings per share of Grenarp Co is currently \$0.42 per share and total earnings are \$8,400,000 per year. The company pays corporation tax of 30% per year.

Required

- (a) Evaluate the effect on the wealth of the shareholders of Grenarp Co of using the net rights issue funds to redeem the loan notes. **(8 marks)**
- (b) Discuss whether Grenarp Co might achieve its optimal capital structure following the rights issue. **(7 marks)**
- (c) Discuss THREE sources and characteristics of long-term debt finance which may be available to Grenarp Co. **(5 marks)**

(Total = 20 marks)

BUSINESS VALUATIONS

Questions 207 to 236 cover Business valuations, the subject of Part F of the BPP Study Text for Paper F9.

MCQ bank – Business valuations

39 mins

207 Which of the following best describes the replacement value of a business?

- A Value if sold off piece-meal
- B Value to replace assets with new
- C Cost of setting up an equivalent venture
- D Net present value of current operations

(2 marks)

208 The following is a summary of Monkton Co's statement of financial position:

	\$m
Non-current assets	5
Net current assets	<u>3</u>
	<u>8</u>
Financed by:	
\$1 Ordinary shares	1
Reserves	5
Loan notes	<u>2</u>
	<u>8</u>

Non-current assets include machinery which cost \$10 million when purchased 7 years ago and has a useful life of 10 years. Monkton Co uses straight-line depreciation. These assets were recently professionally valued at \$1 million.

What is the value per share using the realisable value basis of valuation?

- A \$1
- B \$2
- C \$4
- D \$6

(2 marks)

209 ELW Co recently paid a dividend of \$0.50 a share. This is \$0.10 more than 3 years ago. Shareholders have a required rate of return of 10%.

Using the dividend valuation model and assuming recent dividend growth is expected to continue, what is the current value of a share?

- A \$23.41
- B \$5.00
- C \$38.48
- D \$10.48

(2 marks)

210 Which of the following need to be assumed when using the dividend valuation formula to estimate a share value?

- 1 The recent dividend, ' D_0 ', is typical ie doesn't vary significantly from historical trends
- 2 Growth will be constant
- 3 The cost of equity will remain constant
- 4 A majority shareholding is being purchased

- A 1, 2 and 3 only
- B 3 and 4 only
- C 1 and 2 only
- D 1, 2, 3 and 4

(2 marks)

- 211 Jo Co is a company which is financed by equity only. It has just paid a dividend of \$60m and earnings retained and invested were 60%. Return on investments is 20% and the cost of equity is 22%.

What is the market value of the company (to the nearest whole million)?

- A \$300m
- B \$272m
- C \$305m
- D \$672m

(2 marks)

- 212 DD Co's P/E ratio is 12. Its competitor's earnings yield is 10%.

When comparing DD Co to its competitor, which of the following is correct?

Earnings yield	P/E ratio
A Higher	Higher
B Higher	Lower
C Lower	Higher
D Lower	Lower

(2 marks)

- 213 A 9% redeemable loan note in ATV Co is due to mature in 3 years' time at a premium of 15%, or convertible into 25 ordinary shares at that point. The current share price is \$4, expected to grow at 10% per annum. ATV pays corporation tax at a rate of 30%.

What is the current market value of the loan note if loan note holders require a 10% return?

- A \$108.75
- B \$115.63
- C \$102.03
- D \$122.34

(2 marks)

- 214 Which of the following best defines the market capitalisation for a company's shares?

- A When a company is listed ie goes 'public'
- B When a company issues new shares and thus increases its capital
- C Current share price
- D Share price x number of shares in issue

(2 marks)

- 215 HAL Co is considering purchasing SO Co and has produced the following valuations:

	\$m
1 Historical cost adjusted for general inflation	3
2 Economic value – Net present value of projects	6
3 Piecemeal net realisable value	4
4 Cost of setting up an equivalent business	5

What is the maximum HAL Co should pay based on the above?

- A \$3 million
- B \$6 million
- C \$5 million
- D \$4 million

(2 marks)

- 216 NCW Co is considering acquiring the ordinary share capital of CEW Co. CEW has for years generated an annual cash inflow of \$10 million. For a one off investment of \$6m in new machinery, earnings for CEW can be increased by \$2m per annum. NCW has a cost of capital of 10%.

What is the value of CEW Co?

- A \$114 million
- B \$120 million
- C \$100 million
- D \$94 million

(2 marks)

(Total = 20 marks)

CBE style OTQ bank – Market efficiency

20 mins

- 217 WC Co announces that it decided yesterday to invest in a new project with a huge positive net present value. The share price doubled yesterday.

What does this appear to be evidence of?

- A semi-strong form efficient market
- A strong form efficient market
- Technical analysis
- A weak form efficient market

(2 marks)

- 218 Jai doesn't believe there is any value to be had in reading the first edition of the newspaper to help formulate an investment strategy for his share portfolio.

How efficient does Jai believe the capital markets are?

- Weak form efficient
- Strong form efficient
- Semi-strong form efficient
- Semi-strong or strong form efficient

(2 marks)

- 219 Sarah decides to plot past share price movements to help spot patterns and create an investment strategy.

What does Sarah believe the stock market is?

- Completely inefficient
- Weak form efficient
- Semi-strong form efficient
- Strong form efficient

(2 marks)

- 220 **Which of the following is evidence that stock markets are semi-strong form efficient?**

- Repeating patterns appear to exist.
- Attempting to trade on consistently repeating patterns is unlikely to work.
- The majority of share price reaction to news occurs when it is announced.
- Share price reaction occurs before announcements are made public.

(2 marks)

- 221 **Are the following statements true or false?**

True	False
------	-------

Fundamental analysis values shares according to the expected future cash flows

and risk of a business

Technical analysis values a share based on past share price movements and patterns.

(2 marks)

(Total = 10 marks)

Section B questions

Phobis Co (12/07, amended)

20 mins

The following scenario relates to questions 222 – 226.

Phobis Co is considering a bid for Danoca Co. Both companies are stock-market listed and are in the same business sector. Financial information on Danoca Co, which is shortly to pay its annual dividend, is as follows:

Number of ordinary shares	5 million
Ordinary share price (ex div basis)	\$3.30
Earnings per share	40.0c
Proposed payout ratio	60%
Dividend per share one year ago	23.3c
Dividend per share two years ago	22.0c
Average sector price/earnings ratio	10

222 Calculate the value of Danoca Co using the price/earnings ratio method.

- A \$2m
- B \$5m
- C \$16.5m
- D \$20m

(2 marks)

223 Are the following statements true or false?

- 1 If the P/E ratio of Danoca is lower than the average sector P/E ratio then the market does not view the growth prospects of Danoca very favourably
 - 2 If the P/E ratio of Danoca is higher than the average sector ratio then an acquisition by Phobis could result in improved financial performance of Danoca
- A Statement 1 is true and statement 2 is false
 - B Both statements are true
 - C Statement 1 is false and statement 2 is true
 - D Both statements are false

(2 marks)

224 Using a cost of equity of 13% and a dividend growth rate of 4.5%, calculate the value of Danoca Co using the dividend growth model.

- A \$14.75m
- B \$5.00m
- C \$2.95m
- D \$16.50m

(2 marks)

225 Calculate the market capitalisation of Danoca Co.

- A \$14.75m
- B \$16.50m
- C \$5.00m
- D \$20.00m

(2 marks)

226 Which TWO of the following are true?

- 1 Under weak form hypothesis of market efficiency, share prices reflect all available information about past changes in share price
 - 2 If a stock market displays semi-strong efficiency then individuals can beat the market
 - 3 Behavioural finance aims to explain the implications of psychological factors on investor decisions
 - 4 Random walk theory is based on the idea that past share price patterns will be repeated
- A 1 and 2
B 1 and 3
C 2 and 4
D 3 and 4

(2 marks)

(Total = 10 marks)

CBE style OT case Corhig Co (6/12, amended)

20 mins

The following scenario relates to questions 227 – 231.

Corhig Co is a company that is listed on a major stock exchange. The company has struggled to maintain profitability in the last two years due to poor economic conditions in its home country and as a consequence it has decided not to pay a dividend in the current year. However, there are now clear signs of economic recovery and Corhig Co is optimistic that payment of dividends can be resumed in the future. Forecast financial information relating to the company is as follows:

Year	1	2	3
Earnings (\$'000)	3,000	3,600	4,300
Dividends (\$'000)	nil	500	1,000

The current average price/earnings ratio of listed companies similar to Corhig Co is 5 times.

The company is optimistic that earnings and dividends will increase after Year 3 at a constant annual rate of 3% per year.

227 Using Corhig Co's forecast earnings for Year 1 and the average P/E ratio of similar companies, what is the value of Corhig Co using the price/earnings ratio method?

\$ m

(2 marks)

228 Are the following statements true or false?

True False

A P/E valuation using average earnings of \$3.63m would be more realistic than the P/E ratio method calculated above

Using the average P/E ratio of similar companies is appropriate in this situation

(2 marks)

229 Assuming that the cost of equity is 12%, what is the present value of Corhig Co's year 2 dividend?

\$

(2 marks)

230 Corhig Co plans to raise debt in order to modernise some of its non-current assets and to support the expected growth in earnings. This additional debt would mean that the capital structure of the company would change and it would be financed 60% by equity and 40% by debt on a market value basis. The before-tax cost of debt of Corhig Co would increase to 6% per year. In order to stimulate economic activity the government has reduced the profit tax rate for all large companies to 20% per year.

Assuming that the revised cost of equity is 14%, what is the revised weighted average after tax cost of capital of Corhig Co following the new debt issue? (Give your answer to 2 dp.)

%

(2 marks)

231	Match the description of the risk to the type of risk.	Business	Financial	Systematic
	Risk linked to the extent to which the company's profits depend on fixed, rather than variable costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Risk that shareholder cannot mitigate by holding a diversified investment portfolio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Risk that shareholder return fluctuates as a result of the level of debt the company undertakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				(2 marks)
				(Total = 10 marks)

CBE style OT case Close Co (12/11, amended)

20 mins

The following scenario relates to questions 232 – 236.

Recent financial information relating to Close Co, a stock market listed company, is as follows.

	\$m	\$m
Profit after tax (earnings)	66.6	
Dividends	40.0	
Statement of financial position information:		
Non-current assets	595	
Current assets	125	
Total assets	<u>720</u>	
Equity		
Ordinary shares (\$1 nominal)	80	
Retained earnings	<u>410</u>	
	<u>490</u>	
Non-current liabilities		
6% Bank loan	40	
8% Bonds (\$100 nominal)	<u>120</u>	
	<u>160</u>	
Current liabilities		
	70	
Total equity and liabilities		<u>720</u>

Financial analysts have forecast that the dividends of Close Co will grow in the future at a rate of 4% per year. This is slightly less than the forecast growth rate of the profit after tax (earnings) of the company, which is 5% per year. The finance director of Close Co thinks that, considering the risk associated with expected earnings growth, an earnings yield of 11% per year can be used for valuation purposes.

Close Co has a cost of equity of 10% per year.

- 232 Calculate the value of Close Co using the net asset value method.

\$ million (2 marks)

- 233 Calculate the value of Close Co using the dividend growth model (DGM).

\$ million (2 marks)

- 234 Calculate the value of Close Co using the earnings yield method (in millions to 1 dp).

\$ million (2 marks)

235 The DGM has been used by financial analysts to value Close Co.

Are the following statements about the dividend growth model (DGM) true or false?

It is very sensitive to changes in the growth rate

True

False

It can only be used if dividends have been paid or are expected to be paid

(2 marks)

236 Close Co is considering raising finance via convertible bonds.

What is the current market value of a convertible bond where conversion is expected?

- A The sum of the present values of the future interest payments + the present value of the bond's conversion value
- B The sum of the present values of the future interest payments - the present value of the bond's conversion value.
- C The higher of the sum of the present values of the future interest payments and the present value of the bond's conversion value.
- D The lower of the sum of the present values of the future interest payments and the present value of the bond's conversion value.

(2 marks)

(Total = 10 marks)

RISK MANAGEMENT

Questions 237 to 261 cover Risk Management, the subject of Part G of the BPP Study Text for Paper F9.

MCQ bank – Foreign currency risk

39 mins

- 237 Exporters Co is concerned that the cash received from overseas sales will not be as expected due to exchange rate movements.

What type of risk is this?

- A Translation risk
- B Economic risk
- C Rate risk
- D Transaction risk

(2 marks)

- 238 The current euro / US dollar exchange rate is €1 : \$2. ABC Co, a Eurozone company, makes a \$1,000 sale to a US customer on credit. By the time the customer pays, the Euro has strengthened by 20%.

What will the Euro receipt be?

- A €416.67
- B €2,400
- C €600
- D €400

(2 marks)

- 239 The current spot rate for the US dollar /euro is \$/€ 2.0000 +/- 0.003. The dollar is quoted at a 0.2c premium for the forward rate.

What will a \$2,000 receipt be translated to at the forward rate?

- A €4,002
- B €999.5
- C €998
- D €4,008

(2 marks)

- 240 Which are true of forward contracts?

- 1 They fix the rate for a future transaction.
 - 2 They are a binding contract.
 - 3 They are flexible once agreed.
 - 4 They are traded openly.
- A 1, 2 and 4 only
 - B 1, 2, 3 and 4
 - C 1 and 2 only
 - D 2 only

(2 marks)

- 241 A US company owes a European company €3.5m due to be paid in 3 months' time. The spot exchange rate is \$1.96 - \$2 : €1 currently. Annual interest rates in the two locations are as follows:

	Borrowing	Deposit
US	8%	3%
Europe	5%	1%

What will be the equivalent US \$ value of the payment using a money market hedge?

- A \$6,965,432
- B \$6,979,750
- C \$7,485,149
- D \$7,122,195

(2 marks)

242 In comparison to forward contracts, which TWO of the following are true in relation to futures contracts?

- 1 They are more expensive.
- 2 They are only available in a small amount of currencies.
- 3 They are less flexible.
- 4 They may be an imprecise match for the underlying transaction.

- A 1, 2 and 4 only
- B 2 and 4 only
- C 1 and 3 only
- D 1, 2, 3 and 4

(2 marks)

243 A company based in Farland (with the Splot as its currency) is expecting its US customer to pay \$1,000,000 in 3 month's time and wants to hedge this transaction using currency options.

What is the option they require?

- 1 A Splot put option purchased in America
 - 2 A US dollar put option purchased in Farland
 - 3 A Splot call option purchased in America
 - 4 A US dollar call option purchased in Farland.
- A 2 or 3 only
 - B 2 only
 - C 1 or 4 only
 - D 4 only

(2 marks)

244 The current spot rate for the US\$ to the European € is \$2: €1. Annual interest rates in the two countries are 8% in the US, and 4% in Europe.

What is the 3 months forward rate (to 4 decimal places) likely to be?

- A \$1.9804: €1
- B \$2.0198: €1
- C \$1.9259: €1
- D \$2.0769: €1

(2 marks)

245 What does purchasing power parity refers to?

- A A situation where two businesses have equal available funds to spend.
- B Inflation in different locations is the same.
- C Prices are the same to different customers in an economy.
- D Exchange rate movements will absorb inflation differences.

(2 marks)

246 If a country's currency strengthens, what effect will it have on its exporters and importers?

- | Exporters | Importers |
|--------------|------------|
| A Better off | Better off |
| B Better off | Worse off |
| C Worse off | Better off |
| D Worse off | Worse off |

(2 marks)

(Total = 20 marks)

MCQ bank – Interest rate risk

20 mins

247 Which is the best definition of basis risk?

- A Interest rates on deposits and on loans are revised at different times.
- B Interest rates on deposits and loans move by different amounts.
- C Interest rates move.
- D The bank base rate might move with a knock on effect to other interest rates.

(2 marks)

248 If a business benefits from gap exposure what does this mean?

- A The timing of interest rate movements on deposits and loans means it has made a profit.
- B The timing of interest rate movements on deposits and loans means it has made a loss.
- C The interest rates reduce between deciding a loan is needed and signing for that loan.
- D The inefficiencies between two markets means arbitrage gains are possible.

(2 marks)

249 Which of the following explain the shape and movement of a yield curve?

- 1 Expectations theory
 - 2 Liquidity preference theory
 - 3 Market segmentation theory
- A 1 and 2 only
 - B 2 and 3 only
 - C 1 and 3 only
 - D 1, 2 and 3

(2 marks)

250 Interest rates are currently 5%. ADB Co needs a \$4 million six month loan in 3 months' time and buys a 3-9 Forward Rate Agreement (FRA) at 8%. When ADB Co signs the loan they agree to a rate of 7%.

What is the payment or receipt ADB Co will make or receive under the FRA?

- A ADB pays the bank \$40,000
- B ADB pays the bank \$20,000
- C ADB receives \$40,000 from the bank
- D ADB received \$20,000 from the bank

(2 marks)

251 Which of the following is true of exchange traded interest rate options?

- 1 They maintain access to upside risk whilst limiting the downside to the premium.
 - 2 They can be sold if not needed.
 - 3 They are expensive.
 - 4 They are tailored to an investor's needs.
- A 1 and 2 only
 - B 1 and 3 only
 - C 2, 3 and 4 only
 - D 1, 2 and 3 only

(2 marks)

(Total = 10 marks)

Rose Co (6/15, amended)

20 mins

The following scenario relates to questions 252 – 256.

Rose Co expects to receive €750,000 from a credit customer in the European Union in six months' time. The spot exchange rate is €2.349 per \$1 and the six month forward rate is €2.412 per \$1. The following commercial interest rates are available to Rose Co:

	<i>Deposit rate</i>	<i>Borrow rate</i>
Euros	4.0% per year	8.0% per year
Dollars	2.0% per year	3.5% per year

Rose Co does not have any surplus cash to use in hedging the future euro receipt. It also has no euro payments to make.

- 252 What could Rose Co do to reduce the risk of the euro value dropping relative to the dollar before the €750,000 is received?
- A Deposit €750,000 immediately
 - B Enter into an interest rate swap for six months
 - C Enter into a forward contract to sell €750,000 in six months
 - D Matching payments and receipts to the value of €750,000
- (2 marks)
- 253 What is the dollar value of a forward market hedge?
- A \$310,945
 - B \$319,285
 - C \$1,761,750
 - D \$1,809,000
- (2 marks)
- 254 If Rose Co used a money market hedge, what would be the percentage borrowing rate for the period?
- A 1.75%
 - B 2.00%
 - C 4.00%
 - D 8.00%
- (2 marks)
- 255 Rose Co is also considering using futures, swaps and options, as well as forward exchange contracts. Which of the following statements is correct?
- A Once purchased, currency futures have a range of close-out dates
 - B Currency swaps can be used to hedge exchange rate risk over longer periods than the forward market
 - C Banks will allow forward exchange contracts to lapse if they are not used by a company
 - D Currency options are paid for when they are exercised
- (2 marks)
- 256 Rose Co is worried about future changes in interest rates. Which of the following statements is correct?
- A Governments can keep interest rates low by buying short-dated government bills in the money market
 - B The normal yield curve slopes upward to reflect increasing compensation to investors for being unable to use their cash now
 - C The yield on long-term loan notes is lower than the yield on short-term loan notes because long-term debt is less risky for a company than short-term debt
 - D Expectations theory states that future interest rates reflect expectations of future inflation rate movements
- (2 marks)

(Total = 10 marks)

CBE style OT case Zigto Co (6/12, amended)

20 mins

The following scenario relates to questions 257 – 261.

Zigto Co is a medium-sized company whose ordinary shares are all owned by the members of one family. The domestic currency is the dollar. It has recently begun exporting to a European country and expects to receive €500,000 in six months' time. The company plans to take action to hedge the exchange rate risk arising from its European exports.

Zigto Co could put cash on deposit in the European country at an annual interest rate of 3% per year, and borrow at 5% per year. The company could put cash on deposit in its home country at an annual interest rate of 4% per year, and borrow at 6% per year. Inflation in the European country is 3% per year, while inflation in the home country of Zigto Co is 4.5% per year.

The following exchange rates are currently available to Zigto Co:

Current spot exchange rate	2.000 euro per \$
Six-month forward exchange rate	1.990 euro per \$
One-year forward exchange rate	1.981 euro per \$

Zigto Co wants to hedge its future euro receipt.

- 257 What is the dollar value of a forward exchange contract (to the nearest whole number)?

(2 marks)

- 258 What is the dollar value of a money market hedge (to the nearest whole number)?

(2 marks)

- 259 What is the one year expected (future) spot rate predicted by purchasing power parity theory(to 3 dp)?

(2 marks)

- 260 Zigto Co is considering the effects of interest rates and inflation rates.

Are the following statements true or false?

- Purchasing power parity tends to hold true in the short term
Expected future spot rates are based on relative inflation rates between two countries
Current forward exchange rates are based on relative interest rates between two countries

True	False
------	-------

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

- 261 Zigto Co is considering several types of risk.

Are the following statements true or false?

- 1 Transaction risk affects cash flows
2 Translation risk directly affects shareholder wealth
3 Diversification of supplier and customer base across different countries reduces economic risk

True	False
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

(Total = 10 marks)

Answers

MCQ bank – Financial management and financial objectives

1 **B** 80c

	\$
Profit before tax	2,628,000
Less tax	<u>788,000</u>
Profit after tax	1,840,000
Less preference dividend ($6\% \times 4,000,000$)	<u>240,000</u>
Earnings attributable to ordinary shareholders	1,600,000
Number of ordinary shares	<u>2,000,000</u>
EPS = $1,600,000 / 2,000,000 =$	80c

Syllabus area A3(d)(i)

2 **B** Both statements are true.

Syllabus area A1(b)

3 **B** $P/E \text{ ratio} = \frac{MV \text{ ex div}}{EPS} = \frac{\$3.60}{60c} = 6$

MV ex div = $3.72 - 0.12 = 3.60$. The ex div price is used because it reflects the underlying value of the share after the dividend has been paid.

Syllabus area A3(d)

4 **D** 500 cents

Step 1 Calculate the dividend amount using dividend cover

Dividend cover = EPS / Dividend per share

\therefore Dividend per share = EPS / Dividend cover

\therefore Dividend per share = $60 / 2.5 = 24c$

Step 2 Calculate the market price of share using dividend yield

Dividend yield = Dividend per share / Market price per share

\therefore Market price per share = Dividend per share / Dividend yield

\therefore Market price per share = $24 / 0.048 = 500c$

Syllabus area A3(d)

5 **C** Not-for-profit organisations have objectives generally concerned with efficient use of resources in the light of specific targets. Controlling input costs will be important (economy) but *minimising* input costs would be likely to affect quality.

Syllabus area A4(a)

CBE style OTQ bank – Financial management and financial objectives

6 Investment, finance and dividend. Although cash flow is vitally important, managing and maximising cash flow is achieved by the other three interlinking decisions.

Syllabus area A2(b)

7 Minimisation of risk. Corporate governance best practice aims to *manage* risk to desired and controlled levels, not to minimise risk. Running a business implies taking calculated risks in anticipation of a commensurate return.

Syllabus area A3(e)(ii)

- 8 37.5%
 ROCE = Profit before interest and tax/Capital employed
 As interest cover = 5 times, and interest payable = \$1.5m. Profit before interest and tax = $5 \times 1.5 = \$7.5m$
 Asset turnover = Revenue/Capital employed. Revenue = \$200m so Capital employed = $200/10 = \$20m$
 Therefore ROCE = $7.5 / 20 = 0.375 = 37.5\%$
- Syllabus area A3(d)(i)
- 9 Efficiency has increased but effectiveness has decreased
 Economy is the cost of inputs (for example teacher salaries). This is not mentioned in the question.
 Efficiency is the ratio of inputs to outputs. Each teacher (input) is now teaching more students, so efficiency has increased.
 Effectiveness is the quality of outputs. The output in this example is exam results, which have suffered - hence effectiveness is reduced.
- Syllabus area A4(c)
- 10 36.4%
 Shareholder return $= (P_1 - P_0 + D_1) / P_0$.
 \therefore shareholder return $= (0.75 + 0.25) / (3.50 - 0.75)$
 $= 36.4\%$
- Syllabus area A3(d)(ii)
- 11 Government
 Shareholders, customers and bankers are all connected stakeholders.
- Syllabus area A3(a)
- 12 'Cost per successfully treated patient' relates to efficiency. Efficiency measures relate the resources used to the output produced (getting as much as possible for what goes in).
 'Proportion of patients readmitted after unsuccessful treatment' relates to effectiveness. Effectiveness means, getting done, by means of economy and efficiency, what was supposed to be done.
 'Cost per operation' relates to economy (spending money frugally). As does 'Percentage change in doctors' salaries compared with previous year'.
- Syllabus area A4(c)
- 13 Achieving agreed targets
 Effectiveness can only be measured in terms of achieved performance. Economy consists of minimising costs, for example, by obtaining suitable inputs at the lowest price. Efficiency, in the narrow sense used here, consists of achieving the greatest output per unit of input: avoiding waste of inputs would contribute to this. Achieving a given level of profit is a measure of overall efficiency.
- Syllabus area A4(b)
- 14 1, 2 and 3. The figures needed to calculate ROCE are easily available from the financial accounting records.
- Syllabus area A3(d)
- 15 Statement 2 is true and statement 1 is false. The financial management function is responsible for making decisions relating to investment (statement 2) but will also have primary responsibility for cash flow forecasting (statement 1). Financial reporting control cash flow reporting but not forecasting.
- Syllabus area A1(a)

ABC Co

16 B

		20X8	20X7
ROCE (PBIT/Long-term capital)		$\$14,749/(\$53,900) = 27.4\%$	$\$13,506/(\$52,587) = 25.7\%$

$$\text{Percentage increase} = \frac{27.4 - 25.7}{25.7} = 6.7\%$$

17 D 19.8%

$$\text{Net profit margin} = \frac{\text{PBIT}}{\text{Sales}} = \frac{\$14,749}{\$74,521} = 19.8\%$$

18 D The total shareholder return is $(P_1 - P_0 + D_1)/P_0 = (8.82 - 7.41 + 0.34)/7.41 = 23.6\%$.

19 A Statement 1 is true and statement 2 is false.

The shareholders of ABC would probably be reasonably pleased with the performance over the two years. (For example, share price has increased by 19% $((8.82 - 7.41)/7.41 \times 100\%)$.) However, salaries and wages have only increased by 2.4% $((20,027 - 19,562)/19,562 \times 100\%)$ so employees may be less pleased with the situation. So statement 1 is true. Statement 2 is false. The financial risk that the shareholders are exposed to does not appear to be a problem area as gearing has decreased from 49.9% to 35.1% and interest cover is more than sufficient.

20 B All of the statements support the theory. Accounting profits can be manipulated to some extent by choices of accounting policies. Profit does not take account of risk. Shareholders will be very interested in the level of risk, and maximising profits may be achieved by increasing risk to unacceptable levels. Profits on their own take no account of the volume of investment that it has taken to earn the profit. Profits must be related to the volume of investment to have any real meaning. Profits are reported every year (with half-year interim results for quoted companies). They are measures of short-term historic performance, whereas a company's performance should ideally be judged over a longer term and future prospects considered as well as past profits.

MCQ bank – Financial management environment

21 C Fiscal policy is the balance of government taxation and spending. A contractionary fiscal policy implies a government budget surplus – the government is reducing demand by withdrawing higher amounts from the economy by way of higher taxation and/or spending less. 'B' would be the result of an expansionary fiscal policy. 'A' may happen as a result of an expansionary policy as an economy 'booms.' 'D' may happen following a contractionary fiscal policy, although lower inflation and interest rates are only a secondary effect. As an economy enters recession, inflationary pressure may decrease and interest rates may be reduced to encourage borrowing. However as these are not directly due to fiscal policy, C is the more direct and immediate impact.

Syllabus area B1(c)

22 A Monetary policy manages demand by influencing the supply of money (including the availability of credit) and interest rates. An expansionary policy implies low interest rates to encourage borrowing and investment, and to discourage saving. It also implies an increased availability of credit to encourage spending and the stimulation of demand in an economy. Tax rates are a tool of fiscal policy, so C and D are incorrect. B would be the result of a contractionary monetary policy.

Syllabus area B1(c)

- 23 A As an economy approaches its peak, inflation increases because price increases 'soak up' high demand as productivity peaks. Unemployment is low so businesses struggle to fill vacancies. B is incorrect – export demand is affected by foreign demand not domestic, and growth rates are unlikely to be increasing as the economy reaches its peak - they will decrease. C describes a recession. D is incorrect because as an economy peaks a contractionary fiscal policy is likely to be employed implying lower government spending and higher taxation.

Syllabus area B1(c)

- 24 A Money markets are markets for short-term capital, not long-term capital.

Syllabus area B3(c)

- 25 A Rationale: Debts lose 'real' value with inflation: a company that owes a lot of money would effectively pay less (in real terms) over time. The other organisations would suffer because: inflation would make exports relatively expensive and imports relatively cheap; business might be lost due to price rises; and the cost of implementing price changes would be high.

Syllabus area B1(d)

MCQ bank – Financial management environment

- 26 C Dividend creation benefits the intermediaries' investors, not their customers/borrowers.

Syllabus area B2(b)

- 27 C Certificate of deposit, commercial paper and treasury bill. Money markets focus on short-term financial instruments. A corporate bond is a long-term source of finance, hence is a capital market instrument. Certificates of deposit and commercial paper are short-term private sector lending/borrowing. A treasury bill is short-term government borrowing.

Syllabus area B3(c)

- 28 B Increased regulation and transparency reduce the actual and perceived risk from the point of view of shareholders, making the shares more attractive and hence more valuable. In addition listed company shares are naturally more liquid than an equivalent unlisted company, again adding to their value. The process of listing is therefore likely to create value.

Syllabus area B2(c)

- 29 C Eurobonds by definition are bonds issued in a currency other than the domestic currency of the country of issue. The prefix 'Euro' does not refer to the continent Europe or the European currency the 'Euro'.

Syllabus area B2(d)

- 30 D Ordinary shares are riskiest as all other investors are preferential to ordinary shareholders. Preference shares are riskier than corporate bonds as preference shares are paid after corporate bonds – bonds imply a contractual right to receive a pre-defined level of return. Treasury bills are short-term government borrowing hence are the lowest risk of all.

Syllabus area B2(d)

MCQ bank – Financial management environment

- 31 B Lower interest rates are likely to lead to an increase in spending. The cost of borrowing will decrease, so people can borrow more, and use their borrowings to spend more. Conversely, people will save less, because they will earn less interest on their savings.
- 32 D Investment is an injection of income into the economy. Saving, imports and taxation are all withdrawals.
- 33 A This is the central argument of monetarist theory.

- 34 D Fiscal policy is concerned with the government's tax income, expenditure and borrowing (to make up the difference between income and expenditure).
- 35 C Fiscal policy looks at the way government spending and taxation are balanced. An increase in government spending will act as an injection to boost aggregate demand in the economy, so C is the correct answer. An increase in corporation tax (B) would reduce aggregate demand rather than increase it. Although lowering interest rates could boost aggregate demand in an economy (and is therefore expansionary) it is a monetary policy rather than a fiscal policy. Similarly, increasing the money supply, although expansionary, is a monetary policy rather than a fiscal policy.

CBE style OTQ bank – Financial management environment

- 36 Both statements are true. If a government spends more, for example, on public services such as hospitals, without raising more money in taxation, it will increase expenditure in the economy and raise demand. Although the second statement appears to contradict the first, it is also true. After the government has kick-started demand (as in statement 1) then it should be able to repay the borrowing it has taken on as tax receipts rise due to higher economic activity.
- Syllabus area B1(c)
- 37 UK exporters to US will suffer. UK importers from US will benefit.
A weakening dollar implies, for example, an exchange rate that moves from, say, \$1:£1 to \$2:£1. A UK exporter will therefore receive less £ sterling for their \$ revenue. However a UK company importing from the US will benefit by way of a lower £ cost for any given \$ price they need to pay for their imports.
- Syllabus area B1(b)
- 38 Options 1, 2 and 3 only. Option 4 is more likely to be a social policy objective as opposed to a macroeconomic objective.
- Syllabus area B1(a)
- 39 Encouraging economic growth
Low and stable inflation
Achievement of a balance between exports and imports.
- The four main objectives of macroeconomic policy relate to economic growth, stable inflation, unemployment and the balance of payments (balance between exports and imports). Equitable income distribution of income is a social / political issue.
- Syllabus area B1(a)
- 40 Increasing the exchange rate. Rationale: Increasing the exchange rate will increase the price of exported goods and lower the price of imported goods, this is likely to lead to a fall in domestic economic activity. Increasing public expenditure should increase the level of consumer demand. Decreasing taxation has the opposite effect. Lowering interest rates should stimulate investment (by companies) and consumer expenditure, even if only after a time lag.
- Syllabus area B1(b)

MCQ bank – Working capital

- 41 B 49.5 days
The length of the cash operating cycle is receivables days plus inventory days less payables days.
Inventory days = 365 days/10 = 36.5 days.
Therefore the length of the cash operating cycle is: 58 days + 36.5 days – 45 days = 49.5 days
Non-current assets are not relevant as they are not part of working capital.
- Syllabus area C3(a)

- 42 C Both the cash operating cycle and reported profits will reduce.

Receivables paying sooner will reduce receivables days and hence reduce the length of the cash operating cycle. The cost of the discount (approximately 2% per month as they pay a month earlier than usual) outweighs the interest saved on the overdraft (at 10% per annum this is less than 1% per month) hence the net effect will be reduced profit.

Syllabus area C2(d)

- 43 A 36.5 days

$$\text{Current ratio} = \text{current assets} / \text{current liabilities} = 2$$

$$\text{Here} = (\$3m + \text{inventory}) / \$2m = 2$$

$$\text{So inventory} = \$1m$$

$$\text{If cost of sales is } \$10m \text{ then inventory days} = (1/10) \times 365 = 36.5 \text{ days}$$

Syllabus area C3(a)

- 44 D Overtrading often occurs with young, successful, fast growing businesses. Cash being received from sales made a while ago (which were relatively low if the business is growing quickly) is insufficient to finance current production levels if growth is excessive. The result is a strain on cash flows, even if the business is technically profitable. Option B describes over-capitalisation.

Syllabus area C3(a)

- 45 D Both will increase.

The quick ratio = Current assets (less inventories)/Current liabilities.

If some inventory is sold on credit, all else being equal receivables (current assets) will increase, so the quick ratio will increase.

The current ratio = Current assets/Current liabilities. Inventory and receivables are both current assets. However as the inventory is sold at a profit, the increase in receivables will be more than the decrease in inventory, the net effect being an increase in current assets, hence the current ratio will increase.

Syllabus area C2(b)(i)

CBE style OTQ bank – Managing working capital

- 46 1,600

Annual demand = $40 \times 250 = 10,000$ ball bearings = D

Order cost = \$64 = C_o

Holding cost per year per unit = 25% of \$2 = \$0.50 = C_h

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2C_0D}{C_h}} \\ &= \sqrt{\frac{2 \times 64 \times 10,000}{0.5}} \\ &= 1,600 \text{ ball bearings} \end{aligned}$$

Syllabus area C2(c)

- 47 \$22,219

Total cost = Annual purchase costs + annual ordering cost + annual holding cost.

Annual purchase cost = 10,000 units \times \$2 = \$20,000

Annual ordering cost = number of orders \times cost per order = $(10,000/250) \times \$50 = \$2,000$

Annual holding cost = Average inventory level \times cost to hold per unit per annum

$$= [(250/2) + 50] \times \$1.25 = \$218.75$$

Total cost = \$20,000 + \$2,000 + \$218.75 = \$22,218.75 = \$22,219 (to nearest \$).

Syllabus area C2(c)

- 48 Ease of production scheduling

Manufacturing to order makes production scheduling inherently difficult as production levels are more difficult to plan for.

Syllabus area C2(c)

- 49 \$114,521 cost

The current collection period is $4/20 \times 365 = 73$ days

Therefore a reduction to 60 days would be a reduction of 13 days

Hence $13/365 \times \$20m = \$712,329$ reduction in receivables.

Finance cost saving = $\$712,329 \times 12\% = \$85,479$

Cost of discount = $1\% \times \$20$ million = \$200,000 per annum

Net cost = $\$200,000 - \$85,479 = \$114,521$

Syllabus area C2(d)

- 50 1, 2, 3 and 4. Bad debt insurance is provided by a non-recourse factoring arrangement. Factors also provide administrative services such as managing the receivables ledger and the collection procedures. Factors can also lend money using the receivables ledger as security so they are also a potential source of finance.

Syllabus area C2(d)

- 51 Commercial paper.

Commercial paper is a source of finance and not directly applicable to the management of foreign debts.

Syllabus area C2(d)

- 52 \$28,500

The cost is $(\text{total sales} \times 1.5\%) + \$6,000 = (\$1.5m \times 1.5\%) + \$6,000 = \$28,500$

Non recourse means that the factor carries the risk of the bad debts.

Syllabus area C2(d)

- 53 'Assumes a small number of close suppliers' relates to just-in-time. It is not a drawback of EOQ.

Syllabus area C2(c)

- 54 'Increased risk of bad debts' relates to receivables, not payables.

Syllabus area C2(e)

- 55 Less risk of inventory shortages. Inventory shortages are the most likely problem with a JIT inventory ordering system.

Syllabus area C2(c)

CBE style OTQ bank – Working capital finance

56 \$290,084

Receipts for March:

	\$
50% March sales for cash ($50\% \times \$150,000$)	75,000
$80\% \times \text{February credit sales less } 4\% \text{ discount} (50\% \times 80\% \times \$501,500 \times 96\%)$	192,576
$15\% \times \text{January credit sales} (50\% \times 15\% \times \$300,100)$	22,508
	<u>290,084</u>

Syllabus area C2(b)

57 \$258,000

The Baumol model applies here. This is effectively economic order quantity applied to cash draw-downs as follows:

$$\begin{aligned} & \sqrt{\frac{2 \times \text{cost of ordering} \times \text{annual cash required}}{\text{Net interest of holding } \$1 \text{ for 1 year}}} \\ &= \sqrt{\frac{2 \times 200 \times \$10m}{0.06}} \\ &= \$258,199 = \$258,000 \text{ to the nearest } \$'000 \end{aligned}$$

Syllabus area C2(f)

58 They are all true.

Miller Orr defines the difference between the upper limit and lower limit as the 'spread'.

TB Co's spread is $\$10m - \$1m = \$9m$.

Miller Orr also defines the return point as the lower limit plus a third of the spread. In this case:

$$1 + [(1/3) \times 9] = \$4m$$

When the upper limit is reached, sufficient securities are purchased to reduce the cash balance back to the return point. In this case $\$10m - \$4m = \$6m$. Therefore statement 1 is correct.

When the lower limit is reached, sufficient securities are sold to increase the cash balance back up to the return point. In this case $\$4m - \$1 = \$3m$. Therefore statement 2 is correct.

The spread is calculated as:

$$3 \left[\frac{\frac{3}{4} \times \text{transaction cost} \times \text{variance of cash flows}}{\text{interest rate}} \right]^{\frac{1}{3}}$$

An increase in variance will therefore increase the spread. Therefore statement 3 is correct.

Syllabus area C2(f)

59 More short-term finance is used because it is cheaper although it is risky. Aggressive working capital finance means using more short-term finance (and less long-term). Short-term finance is cheaper but it is risky – it may not be renewed when required and finance rates may change when they are renewed. C describes a conservative financing policy. D is describing a more aggressive working capital investment policy (not finance).

Syllabus area C3(b)

60

Rate risk and renewal risk.

Rate risk refers to the fact that when short-term finance is renewed, the rates may vary when compared to the previous rate. This risk is less with long-term finance as it is renewed less frequently.

Renewal risk refers to the fact that finance providers may not renew the source of finance when it matures. This risk will be more acute with short-term finance as it needs renewing more often.

Short-term finance tends to be more flexible than long-term finance (eg overdraft, or supplier credit) so 'inflexibility' is incorrect. Maturity mismatch is not a risk specifically related to short-term finance so is incorrect.

Syllabus area C3(b)

PKA Co

- 61 **B** 1 and 2 only. The two main objectives of working capital management are to ensure the business has sufficient liquid resources to continue the business and to increase its profitability. These two objectives will often conflict because liquid assets give the lowest returns. Statement 3 is therefore not correct.

- 62 **A** 10,000 units

Minimum inventory level = re-order level – (average usage × average lead time)

Average usage per week = 625,000 units / 50 weeks = 12,500 units

Average lead time = 2 weeks

Re-order level = 35,000 units

Minimum inventory level = 35,000 – (12,500 × 2) = 10,000 units

- 63 **D** 25,000 units

Economic order quantity

$$EOQ = \sqrt{\frac{2C_0D}{C_h}} = \sqrt{\frac{2 \times 250 \times 625,000}{0.5}} = 25,000 \text{ units.}$$

- 64 **A** 1 and 2 only. The key to reducing the percentage of bad debts is to assess the credit worthiness of customers. Since the industry average accounts receivable period is 75 days, PKA needs to be careful not to lose business as a result of over-stringent credit control action (such as legal action). A good approach would be to encourage early payment, for example, through early settlement discounts.

- 65 **C** 2 and 3 only. Statement 2 is true. Factors have expertise in managing receivables. Statement 3 is true. Optimum levels of inventory can be maintained because the business will have enough cash to pay for the inventories that it needs Statement 1 is not true. This is a disadvantage as paying directly to a factor is likely to present a negative picture of the firm's attitude to customer relations.

Gorwa Co

- 66 20X7 30.53 times

$$\begin{array}{rcl} & 20X7 \\ \text{Sales/net working capital} & 37,400/(9,200 - 7,975) & = 30.53 \text{ times} \end{array}$$

- 67 92%

$$\text{Increase in inventory} \quad (4,600 - 2,400)/2,400 \times 100\% = 92\%$$

- 68 Both statements are true.

	20X7	20X6
Inventory days	4,600/34,408 × 365 = 49 days	2,400/23,781 × 365 = 37 days
Receivables days	4,600/37,400 × 365 = 45 days	2,200/26,720 × 365 = 30 days

- 69 The correct answers are: Inventory turnover slows down and the current ratio falls. Another symptom of overtrading is a rapid growth in sales revenue (not a rapid reduction). The payment period to accounts payables lengthens as the business takes longer to pay amounts due.
- 70 Non-current assets are sold.
The other events may have limited or no effect on working capital.

Cat Co

- 71 \$907,400
 Current cost = purchase cost + order cost + holding cost
 $\text{Purchase cost} = 120,000 \text{ units} \times \$7.50 = \$900,000 \text{ per year}$
 $\text{Order costs} = \text{number of orders} \times \text{fixed order cost} = (120,000/10,000) \times \$200 = \$2,400 \text{ per year}$
 $\text{Holding cost} = \text{average inventory level} \times \text{cost per unit per year} = (10,000/2) \times \$1 = \$5,000.$
 $\text{Total current cost} = \$900,000 + \$2,400 + \$5,000 = \$907,400.$
- Syllabus area C2c
- 72 \$901,400
 The cost = purchase cost + order cost + holding cost
 $\text{Purchase cost} = 120,000 \text{ units} \times \$7.50 \times (1 - 3.6\%) = \$867,600 \text{ per year}$
 $\text{Order costs} = \text{number of orders} \times \text{fixed order cost} = (120,000/30,000) \times \$200 = \$800 \text{ per year}$
 $\text{Holding cost} = \text{average inventory level} \times \text{cost per unit per year} = (30,000/2) \times \$2.20 = \$33,000.$
 $\text{Total cost} = \$867,600 + \$800 + \$33,000 = \$901,400.$
- Syllabus area C2c
- 73 \$89,041
 If the credit period is reduced to 60 days, receivables will become $(60/365) \times \$25 \text{ million} = \$4,109,589$.
 This is $(\$5 \text{ million} - \$4,109,589) = \$890,411$ lower than before, saving interest of $10\% \times \$890,411 = \$89,041$ per year.
 This interest is saved as lower receivables implies more money (lower overdraft) in the bank.
- Syllabus area C2d
- 74 **Statements 1 and 3 are correct.**
 Statement 1 is correct . Sufficient working capital should be maintained to ensure bills can be paid on time, however working capital (receivables, inventory, payables) do not earn a return as such, so excessive working capital is undesirable – spare cash for example should be temporarily placed to earn a return (provided risk is low).
 Statement 2 is incorrect . A conservative approach to working capital investment implies aiming to keep relatively high levels of working capital. The reason for this is generally to reduce risk (less risk of inventory shortages, give customers plenty of time to pay, pay supplier cash) but it is expensive – it is money tied up not directly earning a return – hence will decrease profitability, not increase it.
 Statement 3 is correct . Too much or too little working capital leads to poor business performance. Too much reduces profitability, too little is risky. Hence managing it to an appropriate level is important for a business if it is to be successful.
 Statement 4 is incorrect. The two objectives of working capital management are to ensure the business has sufficient liquid resources and increase profitability. These objectives will often conflict as liquid assets give the lowest returns.
- Syllabus area C1b
- 75 Statement 2 only relates to an aggressive approach.
 Statement 1 relates to a conservative approach to financing working capital. Statement 2 relates to an aggressive approach.
- Syllabus area C3b

76 APX Co

Text references. Financial intermediaries are covered in Chapter 3. Forecasting and working capital financing are covered in Chapters 4, 5 and 6.

Top tips. This question covers the key skills of forecasting financial statements as well as using and interpreting provided financial information. Part (c) requires a quick, relevant discussion of financial intermediaries which will be straightforward if you can remember the key terminology.

Part (a) may throw you as it requires a forecast financial position statement and statement of profit and loss. However, the format is provided in the question and the workings require logical manipulation of the accounting ratios provided. Fill in as many figures as you can and you will gain a mark for each correct calculation.

Easy marks. This question may look daunting initially but there are plenty of easy marks available if you tackle it logically and move on quickly if you get stuck.

ACCA examination team's comments. For part (a) many answers were of a very good standard and gained full marks. Some candidates ignored the forecast financial ratios and applied the expected revenue growth rate to cost of sales and other expenses. Other candidates showed a lack of knowledge of the structure of the statement of profit or loss by calculating the tax liability before subtracting the interest payments.

Part (b) asked for an analysis and discussion of the working capital financing policy of the company in the question. Many students were not aware of the conservative, aggressive and matching approaches to working capital financing policy, and so were ill-prepared for this question.

Marking scheme

		Marks
(a)	Gross profit	1
	Net profit	1
	Profit before tax	1
	Retained profit	1
	Inventory	1
	Trade receivables	1
	Trade payables	1
	Reserves	1
	Overdraft	1
	Layout and format	<u>1</u>
		Maximum
		<u>9</u>
(b)	Working capital financing policies	2-3
	Financial analysis	1-2
	Working capital financing policy of company	<u>2-3</u>
		Maximum
		<u>6</u>
(c)	Relevant discussion on financial intermediaries	<u>5</u>
		<u>20</u>

(a) (i) Forecast statement of profit or loss

	\$m
Revenue ($16.00m \times 1.084$)	17.344
Cost of sales ($17.344m - 5.203m$)	<u>12.141</u>
Gross profit ($17.344m \times 30\%$)	5.203
Other expenses ($5.203m - 3.469m$)	<u>1.734</u>
Net profit ($17.344m \times 20\%$)	3.469
Interest ($10m \times 0.08$) + 0.140m	<u>0.940</u>
Profit before tax	2.529

Tax ($2.529m \times 0.3$)	0.759
Profit after tax	<u>1.770</u>
Dividends ($1.770m \times 50\%$)	0.885
Retained profit	<u>0.885</u>

(ii) Forecast statement of financial position	\$m	\$m
Non-current assets		22.00
<i>Current assets</i>		
Inventory ($12.141m \times (110/365)$)	3.66	
Trade receivables ($17.344m \times (65/365)$)	<u>3.09</u>	
		6.75
Total assets		<u>28.75</u>
<i>Equity finance</i>		
Ordinary shares	5.00	
Reserves ($7.5m + 0.885m$)	<u>8.39</u>	
		13.39
Long-term bank loan		<u>10.00</u>
		23.39
<i>Current liabilities</i>		
Trade payables ($12.141m \times (75/365)$)	2.49	
Overdraft ($28.75m - 23.39m - 2.49 = \text{balancing figure}$)	<u>2.87</u>	
		5.36
Total liabilities		<u>28.75</u>

(b) Working capital financing policy

Working capital financing policies can be described as **conservative**, **moderate** or **aggressive**, depending on the extent to which fluctuating current assets and permanent current assets are financed by short-term sources of finance.

Permanent current assets are the amount required to meet long-term minimum needs and sustain normal trading activity, for example inventory and the average level of accounts receivable.

Fluctuating current assets are the current assets which vary according to normal business activity, for example due to seasonal variations.

A **conservative** working capital financing policy uses **long-term** funds to finance non-current assets and permanent current assets, as well as a proportion of fluctuating current assets.

An **aggressive** working capital financing policy uses **short-term** funds to finance fluctuating current assets and a proportion of permanent current assets as well. This is riskier but potentially more profitable.

A **balance** between risk and return might be best achieved by a moderate policy, which uses long-term funds to finance long-term assets (non-current assets and permanent current assets) and short-term funds to finance short-term assets (fluctuating current assets).

The current statement of financial position shows that APX Co uses **trade payables** and an **overdraft** as sources of **short-term** finance. 89% ($100 \times 4.1/4.6$) of current assets are financed from short-term sources and only 11% are financed from long-term sources. This appears to be a **very aggressive** working capital financing policy which carries significant risk. For example, if the bank called in the overdraft, APX Co might have to resort to more expensive short-term financing.

The **forecast** statement of financial position shows a **reduced** reliance on short-term finance. 79% ($100 \times 5.36/6.75$) of current assets are now financed from short-term sources and 21% are financed from long-term sources. This reduces the risk of the working financing capital policy.

Further moves away from an aggressive policy would be hampered by a lack of ability to pay interest on more long-term debt. The forecast **interest coverage ratio** is only 3.7 times ($3.469/0.94$). Alternatively, APX Co could consider an **increase in equity funding** to decrease reliance on short-term finance.

(c) **Role of financial intermediaries**

Financial intermediaries provide a **link** between investors who have surplus cash and borrowers who have a need for finance.

Financial intermediaries **aggregate** invested funds. This means that they group together the small amounts of cash provided by individual investors, so that borrowers who need large amounts of cash have a convenient and readily accessible route to obtain necessary funds.

Financial intermediaries **reduce** the risk for individual lenders by **pooling**. They will assume the risk of loss on short-term funds borrowed by business organisations. Such losses are shared among lenders in general.

Financial intermediaries also offer **maturity transformation**, in that they bridge the gap between the wish of most lenders for **liquidity** and the desire of most borrowers for loans over longer periods.

77 ZSE Co

Text references. Joint probability is covered in Chapter 10 and accounts receivable are covered in Chapter 5.

Top tips. If the joint probability calculation looks daunting, then it may be better to attempt part (b), which is unrelated to the calculations, before returning to part (a). Don't forget to discuss the results in part (a), where a discussion of issues with the use of expected values will gain marks.

To tackle part (a) the two periods should be looked at separately with all of the possible outcomes from the first period being included as opening balances for period two. As a check that the calculations have been done correctly the sum of the joint probabilities should be 1.

Easy marks. The discussions on trade receivables management in part (b) are straightforward.

ACCA examination team's comments. In part (a) many candidates were unable to calculate these probabilities because they did not appreciate the importance of the joint probabilities used in a probability table.

Candidates were then asked to discuss whether the expected value analysis could assist the company to manage its cash flows. Many candidates tended to discuss ways in which the company could manage cash flows in general, even in some cases discussing cash management models, rather than discussing the usefulness of an expected value analysis. Better answers discussed the benefits and limitations of the analysis that had been undertaken. For part (b) there was a very strong tendency for answers to be framed around lists of ways of improving trade receivables management (a question that has been asked in the past), rather than around factors influencing trade receivables policy.

Marking scheme

	Marks
(a) Expected value of period 1 closing balance	2
Expected value of period 2 closing balance	4
Probability of negative cash balance	1
Probability of exceeding overdraft limit	2
Discussion of expected value analysis	<u>3</u>
	12
(b) Credit analysis	2-3
Credit control	2-3
Collection procedures	<u>2- 3</u>
	Maximum
	<u>8</u>
	<u><u>20</u></u>

(a) (i)

<i>Opening balance</i>	<i>Period 1 cash flow</i>	<i>Closing balance for period 1</i>	<i>Probability</i>	<i>Expected value</i>
\$'000	\$'000	\$'000		\$'000
(500)	8,000	7,500	0.1	750
(500)	4,000	3,500	0.6	2,100
(500)	(2,000)	(2,500)	0.3	(750)
				<u>2,100</u>

The expected value of the cash balance at the end of period 1 is \$2,100,000.

(ii)

<i>Period 1 closing balance</i>	<i>Probability</i>	<i>Period 2 cash flow</i>	<i>Probability</i>	<i>Period 2 closing balance</i>	<i>Joint probability</i>	<i>Expected value</i>
\$'000		\$'000		\$'000		\$'000
(a)	(b)	(c)	(d)	(a) + (c)	(b) × (d)	
7,500	0.1	7,000	0.3	14,500	0.03	435
7,500	0.1	3,000	0.5	10,500	0.05	525
7,500	0.1	(9,000)	0.2	(1,500)	0.02	(30)
3,500	0.6	7,000	0.3	10,500	0.18	1,890
3,500	0.6	3,000	0.5	6,500	0.30	1,950
3,500	0.6	(9,000)	0.2	(5,500)	0.12	(660)
(2,500)	0.3	7,000	0.3	4,500	0.09	405
(2,500)	0.3	3,000	0.5	500	0.15	75
(2,500)	0.3	(9,000)	0.2	(11,500)	0.06	(690)
						<u>3,900</u>

The expected value of the cash balance at the end of period 2 is \$3,900,000.

- (iii) There is a 0.20 ($0.02 + 0.12 + 0.06$) or 20% chance of a negative cash balance at the end of period 2. (These are the joint probabilities of the negative period two closing balances.)
- (iv) There is a 0.18 ($0.12 + 0.06$) or 18% chance that the overdraft limit will be exceeded at the end of period 2. (These are the joint probabilities of the period two closing balances in excess of the overdraft limit of \$2m.)

Discussion

Expected values do not work well for one-off activities as they are based on averages. As such the expected value may not be a possible outcome. For example in period one the expected value of \$2.1m is not a possible outcome and nor is the period two expected balance of \$3.9m. Expected values work best for repeat decisions as they give the average outcome from an activity repeated many times.

ZSE is at risk of exceeding its overdraft limit in both periods. There is a 30% chance of this in period 1 and an 18% chance in period 2. However, extra financing of \$500,000 will only be needed to guard against this in period 1, but \$9.5m may be required in period 2.

Extending the overdraft facility may be appropriate for period 1, but not for period 2.

The model is useful in highlighting the risk faced by ZSE, but assigning probabilities is subjective, even when external experts are used. Whether these probabilities represent realistic outcomes is questionable.

- (b) The factors that ZSE should consider are an analysis of credit, the credit control policy and collection of amounts owing.

Analysis of credit

Finding a level of credit that can be offered involves finding a balance between enticing credit customers, which comes at a cost to the business, and refusing opportunities to make sales.

Creditworthiness is an important area to consider. The risk of the customer defaulting must be balanced against the profitability of sales to that customer.

ZSE should use the following information when assessing creditworthiness of its customers. New customers should provide two references, one from a bank and one trade reference. Publicly available information from published accounts and other sources such as credit reference agencies may be considered. Previous experience of the individual customer should also be taken into account.

ZSE could devise its own credit rating system based on the customer's characteristics. This process depends on having good quality information to base creditworthiness decisions on.

Credit control policy

Customers' payment records and the aged receivables analysis should be reviewed on a regular basis to see if customers are acting within the agreed credit terms.

Regular contact should be made with customers either through statements, emails, letters or telephone calls to ensure that they are aware of the debt and to find out when payment is likely to be received. For ZSE regular contact with customers who are in financial difficulty is necessary to assess going concern issues and to work out whether extended credit terms will be beneficial.

Collecting amounts owing

The overall debt collection policy should be that the costs of collecting the debt do not exceed the benefits of the collection.

Procedures for pursuing overdue debt must be established and followed by credit control staff. Initiating legal proceeding or the use of a debt collection agency should only be considered as a last resort, as this is likely to antagonise customers and may end important trade relationships.

78 WQZ Co

Text references. Receivables management is covered in Chapter 5.

Top tips. For parts (a) and (b) it is important to set up the calculations in a way that makes it easy for the marker to follow.

In part (c) it is important that the answer focuses on the question about factors affecting trade receivables management rather than talking about methods of reducing trade receivables balances.

Easy marks. The discussion of factors in formulating a trade receivables management policy should provide easy marks.

ACCA examination team's comments. For part (a) a number of answers failed to gain full marks because they did not calculate the change in inventory management costs, even after correctly calculating these costs under the current ordering policy and after applying the EOQ model. Poorer answers showed a lack of understanding of the relationship between ordering costs and holding costs, and an inability to calculate these costs. Feedback from markers indicated that some answers to part (b) were disorganised, with unlabelled calculations and a lack of explanation. It is important to help the marking process by labelling calculations, explaining workings and using correct notation, eg '\$ per year', '\$m', 'days' and so on.

Marking scheme

	Marks
(a) Current policy:	
Annual ordering cost	0.5
Annual holding cost	0.5
Total annual cost	1
EOQ policy:	
Annual order size	1
Annual ordering cost and holding cost	1
Change in inventory management cost	1
	<u>5</u>
(b) Reduction in trade receivables	2
Financing cost saving	1
Cost of early settlement discount	1
Comment on net benefit	2
Maximum early settlement discount	1
	<u>7</u>
(c) Relevant discussion	8
	<u><u>20</u></u>

(a) Current policy

$$\text{Order size} = 10\% \times 160,000 = 16,000 \text{ units per order}$$

$$\text{Number of orders} = 160,000/16,000 = 10 \text{ orders per year}$$

$$\text{Annual ordering cost} = 10 \times 400 = \$4,000$$

$$\text{Average inventory} = 5,000 + 16,000/2 = 13,000 \text{ units}$$

$$\text{Holding cost of average inventory} = 13,000 \times 5.12 = \$66,560 \text{ per year}$$

$$\text{Total annual cost} = \$4,000 + \$66,560 = \$70,560$$

EOQ model

$$\text{Order size} = \sqrt{\frac{2 \times 400 \times 160,000}{5.12}} = 5,000 \text{ units per order}$$

$$\text{Number of orders} = 160,000/5,000 = 32 \text{ orders per year}$$

$$\text{Annual ordering cost} = 32 \times 400 = \$12,800$$

$$\text{Average inventory} = 5,000 + 5,000/2 = 7,500 \text{ units}$$

$$\text{Holding cost of average inventory} = 7,500 \times 5.12 = \$38,400 \text{ per year}$$

$$\text{Total annual cost} = \$12,800 + \$38,400 = \$51,200$$

Cost savings from EOQ method

$$70,560 - 51,200 = \$19,360 \text{ per year}$$

Note:

Since the holding cost of buffer stock is a common cost to both models, this could have been omitted from the calculations. Full marks could still be gained from this approach.

(b) Change of receivables policy

Receivables payment period is currently $(18/87.6) \times 365 = 75$ days

Under the new policy only 25% will pay in 30 days, so the revised payment period would be

$(0.25 \times 30) + (0.75 \times 60) = 52.5$ days

Current trade receivables = \$18 m

Revised level using the revised payment period = $87.6 \times (52.5/365) = \12.6 m

Reduction in receivables = $18 - 12.6 = \$5.4$ m

Short-term finance cost is 5.5%

Finance cost savings = $5.4m \times 0.055 = \$297,000$

Administration savings = \$753,000

Total savings = $297,000 + 753,000 = \$1,050,000$

Cost of the discount = credit sales \times % customers taking discount \times discount %

Cost of the discount = $87.6m \times 0.25 \times 0.01 = \$219,000$

Benefit of the discount = $1,050,000 - 219,000 = \$831,000$

The proposed change in receivables management should be accepted, although this does depend on the forecast cost savings being achieved.

Maximum discount

25% of the customers will take the discount. Therefore the total sales value affected by the discount will be 25% of \$87.6million, which is \$21.9million

The maximum discount will be where the costs equal the benefits of \$1,050,000. This would occur at

$1.05/21.9 = 0.048 = 4.8\%$

- (c) The policy on the management of trade receivables will depend on a number of factors.

The level of trade receivables

If there is a substantial amount of capital tied up in trade receivables, then the policy may be aimed at reducing the level of investment by not granting credit as freely as before or shortening the credit terms.

The cost of trade credit

Where the cost of trade credit (including opportunity costs) is high, a company will want to reduce the level of investment in trade receivables.

Competitor trade terms

Unless a company can differentiate itself from its competitors, it will need to, at least, match the credit terms offered by its competitors to avoid a loss of customers.

Liquidity needs

Where a company needs to improve its liquidity they may want to reduce credit terms or consider debt factoring or invoice discounting.

Risk appetite

A company may be prepared to risk higher levels of bad debts by offering credit terms that are relatively relaxed as this will increase sales volume.

Expertise in credit management

If a company lacks expertise in credit management, particularly in monitoring the level of receivables then they may choose to factor their debts.

79 Bold Co

Text references. The cash operating cycle is covered in Chapter 4. Factoring is covered in Chapter 5.

Top tips. For part (a) the requirement leads you to what should be included in your answer so make sure that you have covered these areas. In part (c), it is important to understand the different benefits that are relevant to each of the offers made by the factor.

Easy marks. Part (b) provides easy marks for straightforward calculation of the cash operating cycle.

Marking scheme

		Marks
(a)	Explanation of cash operating cycle	1-2
	Cash operating cycle and working capital policy	2-3
	Cash operating cycle and business operation	2-3
	Other relevant discussion	1-2
		Maximum
(b)	Inventory days	1
	Receivables days	1
	Payables days	1
	Cash operating cycle	1
		4
(c)	Revised trade receivables	1
	Reduction in trade receivables	1
	Reduction in finance cost	1
	Administration costs	0.5
	Saving in bad debts	0.5
	Interest on advance	1
	With-recourse factor fee	0.5
	Net benefit of with-recourse offer	0.5
	Without-recourse factor fee	0.5
	Elimination of bad debts	1
	Net benefit of non-recourse offer	0.5
		8
		20

- (a) The cash operating cycle is the period of time which elapses between the point at which cash begins to be expended on the production of a product and the collection of cash from a customer. The cash operating cycle in a manufacturing business equals the average time that raw materials remain in inventory less the average period of credit taken from suppliers plus the average time taken to produce the goods plus the average time taken by customers to pay for the goods.

There is a relationship between the cash operating cycle and the level of investment in working capital. If the turnover periods for inventories and accounts receivable lengthen, or the payment period to accounts payable shortens, then the operating cycle will lengthen and the investment in working capital will increase. The length of the cash operating cycle depends on the working capital policy which will determine the level of investment in working capital and also of the nature of the business operations.

Working capital policy

The level of investment in working capital depends on the company's working capital policy. Two companies with similar business operations may have significantly different levels of investment depending on whether they adopt a conservative or an aggressive approach. An aggressive policy involves having lower levels of inventory and trade receivables and will therefore mean there is a shorter cash operating cycle. A conservative policy involves having higher levels of inventory and trade receivables and will give rise to a

longer cash operating cycle. The longer cash operating cycle will mean profitability is less than under the aggressive approach, but it reduces risk such as the risk of a stock-out.

Nature of business operations

Business operations will have a significant effect on the cash operating cycle. A business supplying services may have very low levels of inventory whereas a manufacturer may have very high levels of inventory. A retailer who operates mainly using cash sales will have a significantly lower level of trade receivables than a company who conducts most of its sales by offering credit terms.

(b) $\text{Inventory days} = 4,500 / 16,400 \times 365 = 100 \text{ days}$

$$\text{Trade receivables days} = 3,500 / 21,300 \times 365 = 60 \text{ days}$$

$$\text{Trade payables days} = 3,000 / 16,400 \times 365 = 67 \text{ days}$$

$$\text{Cash operating cycle} = 100 + 60 - 67 = 93 \text{ days}$$

(c) **With-recourse offer**

Since the factor will reduce trade receivables days to 35 the trade receivables figure will change.

$$\text{Revised trade receivables} / \$21,300,000 \times 365 \text{ days} = 35 \text{ days}$$

$$\text{Revised trade receivables} = 35 / 365 \times \$21,300,000$$

$$\text{Revised trade receivables under factoring} = \$2,042,466$$

$$\text{Reduction in trade receivables} = \$3,500,000 - \$2,042,466 = \$1,457,534$$

	\$
Finance cost saving ($\$1,457,534 \times 7\%$)	102,027
Administration cost saving	40,000
Bad debt saving ($\$21,300,000 \times (0.09 - 0.06)$)	<u>63,900</u>
	<u>205,927</u>
Additional interest on advance ($2,042,466 \times 0.8 \times 0.02$)	<u>(32,679)</u>
Net benefit	173,248
Factor fee ($21,300,000 \times 0.0075$)	<u>(159,750)</u>
	<u>13,498</u>

Non-recourse offer

As the offer is without recourse, bad debts are reduced to zero as the factor will bear these. Therefore Bold will gain a benefit of a further 0.6% of revenue.

	\$
Net benefit of with recourse offer	173,248
Non-recourse factor fee ($21,300,000 \times 0.0125$)	<u>(266,250)</u>
Net cost before adjusting for bad debts	<u>(93,002)</u>
Elimination of bad debts ($\$21,300,000 \times 0.006$)	<u>127,800</u>
Net benefit	<u>34,798</u>

80 Wobnig Co

Text references. The signs of overtrading are covered in Chapter 4. Working capital financing policy and working capital investment policy are discussed in Chapter 6.

Top tips. In part (a), concentrate on what the question asks for – you will not gain any marks by discussing how Wobnig can improve its working capital position! Start by listing the typical signs of overtrading, before calculating the ratios to support each point. In part (b), the question focuses on working capital – no marks for discussing investment appraisal techniques and debt and equity financing. Revise this area if you are unfamiliar with it.

Easy marks. The ratios in part (a) should give some easy marks.

ACCA examination team's comments. Most answers to part (a) gained good marks. Answers that did not focus on the question asked, which was whether or not the company was overtrading, lost marks as a result.

Many answers struggled to gain good marks in part (b). While many answers showed good understanding of working capital financing policy, fewer answers showed understanding of working capital investment policy, and fewer answers still could discuss the similarities and differences between the two policy areas.

Marking scheme

	Marks
(a) Rapid increase in revenue	1-2
Increase in trade receivables days	1-2
Decrease in profitability	1-2
Rapid increase in current assets	1-2
Increased dependence on short-term finance	2-3
Decrease in liquidity	2-3
Conclusion as regards overtrading	<u>1</u>
	Maximum
	12
(b) Working capital investment policy	3-4
Working capital financing policy	5-6
	Maximum
	8
	<u>20</u>

(a) Signs of overtrading:

Rapid increase in sales revenue: Wobnig's sales revenue has increased by 40% from \$10,375k in 20X0 to \$14,525k in 20X1. This rapid growth in revenue is not supported by a similar increase in long-term financing, which has only increased by 4.7% (\$16,268k in 20X1 compared to \$15,541k in 20X0).

Rapid increase in current assets: Wobnig's current assets have also nearly doubled, increasing from \$2,826k in 20X0 to \$5,349k in 20X1 (89%). This is striking, given that long-term financing has only increased by 4.7%. Trade receivables have increased by 85% (\$1,734k in 20X0 and \$3,200k in 20X1), and inventory levels have increased by 97% (\$2,149k from \$1,092k in 20X0).

Increase in inventory days: Linked to the above, inventory turnover has slowed noticeably, from 60 days in 20X0 to 75 days in 20X1, well above the industry average of 55 days. This may indicate that Wobnig is expecting further increases in sales volumes in the future.

Increase in receivable days: Perhaps a matter of greater concern is the fact that trade receivables are being paid much more slowly. Receivable days have increased from 61 days in 20X0 to 80 days in 20X1, again significantly above the industry average. It could be that in order to encourage sales, Wobnig has offered more favourable credit terms to its customers. However, the increase in receivable days may also indicate that Wobnig is lacking sufficient resources to effectively manage its receivables, and/ or that its customers may be unable to settle their debts on time, as they are struggling financially.

Reduction in profitability: Although Wobnig's sales revenue has increased by 40% over the past year, its PBIT has only increased by 8.9%. The net profit margin has actually decreased, from 36% in 20X0 to 28% in 20X1. This may be due partly to the company selling at lower margins to increase sales volumes, but most likely points to increased costs of sales and operating costs.

With the additional costs associated with holding larger inventories, and increasing financing costs from overdrafts (see below), the company's profitability is likely to suffer even more in the future.

Increase in current liabilities: Wobnig is increasingly financed through current liabilities, which has increased by 131% (from \$1,887k in 20X0 to \$4,365k in 20X1) while long-term financing has increased only marginally by 4.7%. The sales revenue/ net working capital ratio has increased from 11 times to 15 times in 20X1. In particular, overdraft has increased by 500% from 20X0 to 20X1. Payables days have lengthened from 90 days to 100 days, indicating that Wobnig is finding it more difficult to settle trade debts.

All of this will put further strain on financing costs, eroding the distributable profits. The company's interest expense has increased from \$292k to \$355k.

Reduced liquidity: The cause of Wobnig's increasing dependence on overdrafts and lengthening payables days lies in its reduced liquidity. Wobnig's current ratio has reduced from 1.5 times to 1.2 times, compared to the industry average of 1.7 times. The more sensitive quick ratio has reduced from 0.9 times to 0.7 times, against the average of 1.1 times. Wobnig does not yet have a liquid deficit though, as its current assets still exceed its current liabilities.

Conclusion

From the trends discussed above, we can conclude that Wobnig is overtrading.

Workings

Ratio	Formula	20X1	20X0
Net profit margin	PBIT/Revenue × 100%	28%	36%
Current ratio	Current assets/current liabilities	1.2 times	1.5 times
Quick ratio	(Current assets – inventory)/current liabilities	0.7 times	0.9 times
Inventory days	Inventory/cost of sales × 365	75 days	60 days
Receivables days	Trade receivables/revenue × 365	80 days	61 days
Payables days	Trade payables/cost of sales × 365	100 days	90 days
Net working capital	Current assets – current liabilities	\$984,000	\$949,000
Revenue/net working capital	Revenue/net working capital	15 times	11 times

- (b) Working capital investment policy dictates how much a company chooses to invest in current assets. Working capital financing policy, on the other hand, determines how a company funds its day to day operations: with short-term or long-term sources. The working capital investment policy is therefore an investment decision, while the working capital financing policy is a financing decision.

Both working capital investment policy and working capital financing policy are described in terms of conservative, moderate and aggressive. However, these terms mean different things in the contexts of investment and financing.

In the context of working capital investment, a conservative policy aims to reduce the risk of system breakdown by holding high levels of working capital: generous credit terms for customers, high levels of inventory and quick payment of suppliers. This approach can result in a high financing cost and may give rise to cash flow problems. By contrast, an aggressive approach reduces financing cost and increases profitability by cutting inventories, collecting debts early from customers and delaying payment to suppliers.

In the context of working capital financing, current assets are divided into permanent current assets (the level of current assets that supports a standard level of business activity) and fluctuating assets (the level of current assets that rise and fall due to unexpected business demands). A conservative policy is one that uses long-term funding to finance most of the assets of the company, calling upon short-term financing only when fluctuations in current assets push total assets above a certain level. An aggressive policy, by contrast, is one that finances all fluctuating current assets and some permanent current assets out of short-term sources. This approach presents a greater risk of liquidity issues, but allows for lower financing costs. This is because short-term finance is cheaper than long-term finance.

Working capital investment and working capital financing therefore describe two different aspects of working capital management. In fact, it is possible for a company to adopt an aggressive working capital investment policy and a conservative working capital financing policy, or vice versa.

81 KXP Co

Text references. Early settlement discounts, the effect of a change in credit policy, bulk discounts and the factors to be considered in managing trade receivables are all covered in Chapter 5. The optimum level of cash to be held is covered in Chapter 6.

Top tips. The calculations in parts (a) and (b) should pose no problems if you work through them logically.

Easy marks. Parts (a) and (b) contain straightforward calculations. For parts (c) and (d), plan your answers into clearly defined points first, and avoid repeating yourself.

ACCA examination team's comments. In part (a), weaker answers showed a lack of understanding of how the receivables days' ratio links credit sales for a period with the trade receivables balance at the end of the period. Some answers, for example, tried to calculate the revised trade receivables balance by applying changed receivables days ratios to current receivables, instead of applying them to credit sales. In part (b), perhaps because information on holding cost and order cost was provided in the question, many candidates calculated the economic order quantity (EOQ). The question made no reference to the EOQ and an EOQ calculation was not necessary. For part (c), many answers failed to gain reasonable marks because they did not discuss factors. For example, some answers explained the workings of the Baumol and Miller-Orr cash management models. The question did not ask for a discussion of these models and such answers gained little or no credit.

Marking scheme

	Marks
(a) Revised trade receivables	0.5
Reduction in trade receivables	0.5
Reduction in financing cost	1
Cost of early settlement discount	1
Net cost of change in receivables policy	1
Comment on findings	<u>1</u>
	5
(b) Current annual ordering cost	0.5
Current holding cost	0.5
Total cost of current inventory policy	0.5
Revised cost of materials	0.5
Revised number of orders	0.5
Revised ordering cost	0.5
Revised holding cost	0.5
Net benefit of bulk purchase discount	0.5
Comment on assumptions	<u>1</u>
	5
(c) Transactions need for cash	1-2
Precautionary need for cash	1-2
Speculative need for cash	1-2
Other relevant discussion	<u>1-2</u>
	Maximum
(d) Credit analysis	1-2
Credit control	1-2
Receivables collection	1-2
Cost and benefits of trade receivables policy	<u>1-2</u>
	Maximum
	5
	<u>20</u>

(a) **Cost/benefit of changing trade receivables policy**

Receivables paying within 30 days = $50\% \times \$15m \times 30/365 = \$616,438$

Receivables paying after 45 days = $30\% \times \$15m \times 45/365 = \$554,795$

Total receivables changing their payment patterns = $\$616,438 + \$554,795 = \$1,171,233$

Original value of these receivables = $80\% \times \$2,466k = \$1,972,800$

Reduction in receivables = **$\$801,567$**

Cost of early payment discount = $50\% \times \$15m \times 1\% = \$75,000$

Reduction in financing cost = $\$801,567 \times 6\% = \$48,094$

Net cost of changing trade receivables policy = $\$75,000 - \$48,094 = \$26,906$

Alternative calculation for the reduction in receivables

Current receivable days = $\$2,466k / \$15,000k \times 365 = 60$ days

Receivable days under new trade receivables policy = $50\% \times 30 + 30\% \times 45 + 20\% \times 60 = 40.5$ days

Decrease in receivable days = $60 - 40.5 = 19.5$ days

Reduction in receivables = $\$15m \times 19.5/365 = \$801,370$ (difference due to rounding)

Conclusion

The benefit of the new trade receivables policy is outweighed by the associated costs. KXP Co should not adopt the proposed policy. However, the analysis currently excludes bad debts and assumes constant sales throughout the year – the company may need to take these into account. Given that receivables on average are failing to meet the credit period, KXP Co may still want to consider how the trade receivables policy may be changed in order to encourage earlier payment.

(b) Total annual cost of inventory policy = cost of materials + ordering cost + holding cost

Current policy

Annual ordering cost = $12 \times \$150 = \$1,800$

Annual holding cost = $0.24 \times (15,000/2) = \$1,800$

Total annual cost = $\$540,000 + \$1,800 + \$1,800 = \$543,600$

Proposed policy

Annual cost of materials = $\$540,000 \times 98\% = \$529,200$

KXP Co currently requires 180,000 units of Product Z per year ($12 \times 15,000$).

To benefit from the bulk discount, KXP Co needs to order 30,000 units each time. This means KXP Co will make 6 orders per year ($180,000 / 30,000$).

Revised annual ordering cost = $6 \times \$150 = \900

Revised annual holding cost = $0.24 \times (30,000/2) = \$3,600$

Total annual cost = $\$529,200 + \$900 + \$3,600 = \$533,700$

Net benefit

Net benefit of taking bulk purchase discount = $\$543,600 - \$533,700 = \$9,900$

Conclusion

The analysis shows that the bulk discount should be accepted. However, KXP Co may wish to evaluate the appropriateness of a number of key assumptions first:

- Demand for Product Z is constant throughout the year, and does not change from year to year
- Ordering costs and holding costs are both constant throughout the year

(c) The optimum level of cash to be held by a company depends on the following factors:

The level of cash required for the company's operations

This includes holding enough cash to:

- Pay for the transactions expected to occur during the period (including the payment of suppliers, and finance costs). This can be achieved by drawing up a cash budget.
- Cover unexpected expenditure and account for uncertainty in the cash budget. In addition to the cash needs forecasted in the cash budget, the company needs to have a precautionary 'buffer' for unexpected events. This can be estimated based on previous experience.

The availability of finance

Not all sources of finance may be available to a company. A small and medium company, for example, may not be able to obtain or extend bank loans as easily. An unlisted company will find it very difficult, and expensive, to raise funds through issuing securities. Where it is difficult and / or expensive to raise new finance, a company will need to hold more cash.

The availability and attractiveness of other uses for the cash

The amount of cash that a company holds will also depend on whether there are other, more attractive ways to use the cash. Instead of holding cash for no return, a company usually has the option of putting the cash in a deposit account with a bank, investing it in short or long term debt instruments, or investing in equity shares of listed companies. The extent to which the company will consider these alternative uses depends on the amount of investment required, the expected level of return (interest, dividends or capital growth), the term to maturity, the ease of realising the investment.

A company may also wish to hold cash in order to be able take advantage of an unexpected speculative opportunity when it arises.

(d) Factors to consider in formulating a trade receivables management policy

The total credit

Each company must determine the level of total credit it is willing to offer. This involves finding a balance between maximising revenue from customers, and minimising the finance costs associated with funding the period of credit and also minimising bad debts.

Allowing a long period of credit may attract more sales, but the company may suffer from high finance costs. A short period of credit will reduce the need for additional finance, but the company may lose out on sales opportunities.

The cost of the additional finance – be it bank overdraft interest, loans or equity – must be considered.

Credit control

Companies need to have a policy in place for assessing the creditworthiness of customers. Verifying that new customers are creditworthy before concluding the sale reduces the risk of customer default.

This may involve requiring references for new customers, checking credit ratings through a credit rating agency, and offering a lower level of credit for new customers. A credit-rating system may be devised to determine the appropriate level of credit to offer to new customers based on their characteristics (such as age and occupation).

Collection

A credit policy can only be maintained if it is policed effectively and the amounts owing collected. The company will need to monitor customers' payment records to ensure that the credit limits are maintained. An aged receivables analysis should be performed on a regular basis. Any breaches of credit limits should be brought to the attention of the credit controller.

Factors which would influence how tightly a company polices its credit policy include the number of customers requiring more credit, and the extent to which the company is exposed to accounts receivable.

The associated costs of collection, either internal or external, also need to be considered. The costs of collection should not be greater than the amount collected.

Changes to the credit policy

The credit policy needs to be reviewed regularly and revised as economic conditions and customer payment patterns change. The company may wish to assess whether it is beneficial to offer an early payment discount to encourage customers to pay earlier, or extend the credit period to encourage custom.

The associated costs and impact on the company's working capital must be considered. Only when the financial benefit of the change in policy outweighs the additional costs, should the change go ahead.

82 CSZ Co

Text references. The working capital cycle and liquidity ratios are covered in Chapter 4.

Top tips. There are two requirements in part (a) and two requirements in part (b). Make sure that you don't accidentally miss out some of the requirements. You may have been thrown by the mention of a negative working capital cycle but if you think about what the cycle actually means, you should be able to see that a negative cycle is possible.

Easy marks. There are easy marks for calculations in part (a) and part (b) if you know the liquidity ratios.

ACCA examination team's comments. The examination team commented that in part (a), many students incorrectly stated that the working capital cycle should be positive. Many students gained good marks in part (b). For part (c) some students discussed at length possible reasons for the changes in inventory, trade payables, trade receivables and so on, often writing as though the changes had occurred rather being forecast. The only discussion that was specifically required was in the area of working capital financing. This emphasises the need to read the question requirement carefully and to respond directly to what is required.

Marking scheme

		Marks
(a)	Inventory days	0.5
	Trade receivables days	0.5
	Trade payables days	0.5
	Working capital cycle	0.5
	Discussion of working capital cycle	<u>4</u>
		6
(b)	Cost of sales	0.5
	Inventory	0.5
	Trade receivables	0.5
	Current assets	0.5
	Current liabilities	0.5
	Target quick ratio	1
	Net working capital cycle	0.5
	Target sales/net working capital ratio	<u>1</u>
		5
(c)	Trade payables	1
	Overdraft	1
	Analysis of current asset and liability positions	1-3
	Comparison of current asset and liability positions	1-3
	Discussion of change in financing policy	<u>1-3</u>
	Maximum	9
		<u>20</u>

(a)

			Days
Inventory days	=	$\frac{\text{Average inventory}}{\text{Cost of sales}} \times 365$	$\frac{5,700}{26,000} \times 365 = 80$
A/cs receivable days	=	$\frac{\text{Trade receivables}}{\text{Credit sales revenue}} \times 365$	$\frac{6,575}{40,000} \times 365 = 60$
A/cs payable days	=	$\frac{\text{Trade payables}}{\text{Cost of sales}} \times 365$	$\frac{2,137}{26,000} \times 365 = (30)$
Working capital cycle:			110

The working capital cycle is the **period of time** which elapses between the point at which **cash begins to be expended** on the production of a product and the **collection of cash from a customer**. Therefore CSZ Co starts spending 110 days (on average) before cash is collected from the customer.

A **negative** working capital cycle would mean that CSZ was **paid by customers before** it started to **spend cash on the production**. This can sometimes occur. For example, supermarkets often receive payment for goods before they have paid for them.

A business does **not normally have a choice** on whether its working capital cycle is positive or negative because it depends on the inventory, receivables and payables days and these usually **depend on the nature of the business**. The length of the working capital cycle is usually **similar between** businesses in the **same sector**.

(b) Quick ratio = $\frac{\text{Current assets less inventories}}{\text{Current liabilities}} = \frac{8,219}{5,073 + 3,616} = 0.95 \text{ times}$

$$\text{Inventory days} = \frac{\text{Inventory}}{\text{Cost of sales}} \times 365 \therefore \frac{\text{Inventory}}{24,000} \times 365 = 60 \therefore \text{Inventory} = \$3,945$$

$$\text{Receivables days} = \frac{\text{Receivables}}{\text{Sales}} \times 365 \therefore \frac{\text{Receivables}}{40,000} \times 365 = 75 \therefore \text{Receivables} = \$8,219$$

$$\text{Payables days} = \frac{\text{Payables}}{\text{Cost of sales}} \times 365 \therefore \frac{\text{Payables}}{24,000} \times 365 = 55 \therefore \text{Payables} = \$3,616$$

$$\text{Current ratio} = \frac{3,945 + 8,219}{3,616 + \text{overdraft}} = 1.4 \therefore \text{overdraft} = \$5,073$$

$$\begin{aligned} \text{Net current assets at the end of March 20X5} &= \$3,945k + \$8,219k - \$3,616k - \$5,073k \\ &= \$3,475,000 \end{aligned}$$

Target sales = \$40 million

Target ratio of sales to net working capital = $40,000 / 3,475 = 11.5 \text{ times}$

(c) The current liabilities at the end of March 20X5, calculated in part (b), can be divided into trade payables and the forecast overdraft balance.

Trade payables using target trade payables days = $24,000,000 \times 55/365 = \$3,616,438$.

The overdraft (balancing figure) = $8,688,846 - 3,616,438 = \$5,072,408$

Comparing current assets and current liabilities:

	<i>March 20X4</i>	<i>March 20X5</i>
	\$'000	\$'000
Inventory	5,700	3,945
Trade receivables	6,575	8,219
Overdraft	2,137	3,616
	<u>4,682</u>	<u>5,072</u>
Net current assets	<u>5,456</u>	<u>3,476</u>

The overdraft as a percentage of current liabilities will fall from 69% ($4,682/6,819$) to 58% ($5,702/8,688$). Even though the overdraft is expected to increase by 8.3%, current liabilities are expected to increase by 27.4% ($8,688/6,819$). Most of this increase is expected to be carried by trade payables, which will rise by 69.2% ($3,616/2,317$), with trade payables days increasing from 30 days to 55 days.

At the end of March 20X4, current liabilities were 56% of current assets ($100 \times 6,819/12,275$), suggesting that 44% of current assets were financed from a long-term source. At the end of March 20X5, current liabilities are expected to be 71% of current assets ($100 \times 8,688/12,164$), suggesting that 29% of current assets are finance from a long-term source. This increasing reliance on short-term finance implies an aggressive change in the working capital financing policy of CSZ Co.

83 Flit Co

Text references. Cash flow forecasts and short-term investments are covered in Chapter 6. The current ratio is covered in Chapter 4.

Top tips. Part (a) requires you to read the scenario carefully and be methodical. You need to set out your workings separately and think about timings carefully. Part (b) is fairly straightforward. Note that the question says that no inventories are held. Part (c) is worth 3 marks so should take you over 5 minutes. In part (e), don't forget to explain your findings.

Easy marks. There are easy marks for calculations in part (a) by following the proforma approach. There are 4 easy marks available in part (e) for simply using the Miller-Orr formulae given to you in the exam.

Marking scheme

		Marks
(a)	Monthly receivables	1
	Loan	0.5
	Raw materials	1
	Variable costs	1
	Machine	0.5
	Closing balances	<u>1</u>
		5
(b)	Closing finished goods inventory	0.5
	Revised holding and ordering costs	0.5
	Inventory cost if discount is taken	0.5
	Benefit if bulk purchase discount taken	<u>0.5</u>
		2
(c)	Temporary nature of short-term cash surplus	1
	Investment should have no risk of capital loss	1
	Shares are not suitable for investment	<u>1</u>
		3
(d)	Discussion of Baumol model 2-3 marks per valid point	Maximum
		5
(e)	Calculation of spread	1
	Calculation of upper limit	1
	Calculation of return point	1
	Explanation of findings	<u>2</u>
		5
		<u>20</u>

(a)

	Jan \$'000	Feb \$'000	Mar \$'000
Sales revenue (W1)	960	1,000	1,092
Loan income			300
Total cash receipts	<u>960</u>	<u>1,000</u>	<u>1,392</u>
Production costs (W2)	500	520	560
Variable overheads (W3)	130	140	150
Machine purchase			400
Total cash payments	<u>630</u>	<u>660</u>	<u>1,110</u>
Net surplus	330	340	282
Opening balance	<u>40</u>	<u>370</u>	<u>710</u>
Closing balance	<u>370</u>	<u>710</u>	<u>992</u>

Workings**1 Sales**

	<i>Month of sale</i>		<i>Cash received</i>
Dec	1,200 units × \$800	=	\$960,000 Jan
Jan	1,250 units × \$800	=	\$1,000,000 Feb
Feb	1,300 units × \$800 × 1.05	=	\$1,092,000 Mar

2 Production costs

	<i>Month of production</i>		<i>Cash paid</i>
Dec	1,250 units × 2 units × \$200	=	\$500,000 Jan
Jan	1,300 units × 2 units × \$200	=	\$520,000 Feb
Feb	1,400 units × 2 units × \$200	=	\$560,000 Mar

3 Variable overheads

	<i>Month of production</i>		<i>Cash paid</i>
Jan	1,300 units × \$100	=	\$130,000 Jan
Feb	1,400 units × \$100	=	\$140,000 Feb
Mar	1,500 units × \$100	=	\$150,000 Mar

(b) Current ratio = $\frac{\text{current assets}}{\text{current liabilities}}$

Current assets

Inventory = finished goods for April sales of 1,500 units

Cost of production = materials + variable costs = \$400 + \$100 = \$500 per unit

1,500 units × \$500 = \$750,000

Cash = \$992,000

Trade receivables = March 1,400 units × \$800 × 1.05 = \$1,176,000

Current liabilities

Trade payables = cash owed for March raw materials = 1,500 units × 2 units × \$200 = \$600,000

 $\frac{\$750,000 + \$992,000 + \$1,176,000}{\$600,000}$

$$\therefore \text{current ratio} = \frac{\$600,000}{\$600,000} = 4.9 \text{ times}$$

(c) When investing a surplus the company should consider the following.

Liquidity. Shares are not quickly and easily converted into cash.

Profitability. The company should seek to obtain a good return for the risk incurred. A good return on shares usually means a long-term investment. However, the surplus is only temporary.

Safety. Share values can go down as well as up which could lead to capital losses.

The question states that the surplus is a short-term surplus. Investing in shares is therefore inappropriate. A deposit account with a bank would be more appropriate.

(d) **The Baumol model and cash management**

A number of different cash management models indicate the **optimum amount of cash** that a company should hold. One such model is based on the idea that deciding on optimum cash balances is like deciding on optimum inventory levels, and suggests the optimum amount to be transferred regularly from investments to current account.

We can distinguish two types of cost which are involved in obtaining cash:

- (i) The **fixed cost** represented, for example, by the issue cost of equity finance or the cost of negotiating an overdraft
- (ii) The **variable cost** (opportunity cost) of keeping the money in the form of cash

The Baumol approach has the following drawbacks for companies such as Flit Co.

- (i) In reality, it is unlikely to be **possible to predict amounts required** over future periods with much certainty.
- (ii) No **buffer inventory** of cash is allowed for. There may be costs associated with running out of cash.
- (iii) There may be other **normal costs** of holding cash, which increase with the average amount held.
- (iv) It assumes **constant transaction costs** and **interest rates**.

(e) **Determination of spread**

Daily interest rate = $5.11/365 = 0.014\%$ per day

Variance = SD² so variance of cash flows = $1,000 \times 1,000 = \$1,000,000$ per day

Transaction cost = \$18 per transaction

Spread = $3 \times ((0.75 \times \text{transaction cost} \times \text{variance})/\text{interest rate})^{1/3}$

$$= 3 \times ((0.75 \times 18 \times 1,000,000)/0.00014)^{1/3} = 3 \times 4,585.7 = \$13,757$$

Lower limit = \$7,500

Upper limit = $(\$7,500 + 13,757) = \$21,257$

Return point = $\$7,500 + (\$13,757/3) = \$12,086$

Relevance of the values

The Miller-Orr model takes account of **uncertainty** in relation to cash flows. The cash balance of Renpec Co is allowed to vary between the lower and upper **limits** calculated by the model.

If the cash balance reaches an **upper limit** the firm **buys sufficient securities** to return the cash balance to a normal level (called the 'return point'). When the cash balance reaches a lower limit, the firm sells securities to bring the balance back to the return point.

The Miller-Orr model therefore helps Renpec Co to decrease the risk of running out of cash, while avoiding the loss of profit caused by having unnecessarily high cash balances.

84 Widnor Co

Text reference. Factoring and managing foreign accounts receivable are covered in Chapter 5.

Top tips. In part (a) don't forget to state whether the factor's offer is financially acceptable. For part (c), make sure that you answer the specific requirement rather than writing all you know about the subject.

Easy marks. Parts (b) and (c) were fairly straightforward provided you have sufficient knowledge of this area of the syllabus.

ACCA examination team's comments. Some answers to part (c) were one-sided concentrating on exchange rate risk rather than on credit risk.

Marking scheme

	Marks
(a) Reduction in trade receivables	1
Reduction in financing cost	1
Reduction in administration costs	1
Saving in bad debts	1
Increase in financing cost	1
Factor's annual fee	1
Advice on acceptance of factor's offer	<u>1</u>
	7
(b) Bank and other references	1
Credit rating	1
Other relevant discussion	<u>1</u>
	3
(c) Relevant discussion 2-3 marks per valid point	Maximum <u>10</u> <u>20</u>

- (a) The factor's offer will be financially acceptable to Widnor Co if it results in a net benefit rather than a net cost.

	\$
Current trade receivables	4,458,000
Revised trade receivables = $26,750,000 \times 35/360 =$	<u>2,600,694</u>
Reduction in trade receivables	<u>1,857,306</u>

	\$	\$
Reduction in financing cost = $1,857,306 \times 0.05 =$	92,865	
Saving in bad debts = $26,750,000 \times 0.01 \times 0.7 =$	187,250	
Reduction in administration costs	<u>50,000</u>	

Benefits	330,115
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Increase in financing cost = $2,600,694 \times 0.8 \times 0.07 - 0.05 =$	41,611
Factor's annual fee = $26,750,000 \times 0.0075 =$	<u>200,625</u>

Costs	(242,236)
Net benefit	<u>87,879</u>

The factor's offer is therefore financially acceptable.

- (b) The creditworthiness of potential customers can be assessed from a range of different sources of information. References are useful in this respect, and potential customers should supply a bank reference and a trade or other reference when seeking credit on purchases. Another source of information is the credit rating of the potential customer, which can be checked by a credit rating agency or credit reference agency. For larger potential customers, a file can be opened where additional information can be located, evaluated and stored, such as the annual report and accounts of the potential customer, press releases and so on.

(c) **Risks arising from granting credit to foreign customers**

Foreign debts raise the following special problems. When goods are sold abroad, the customer might ask for credit. Exports take time to arrange, and there might be complex paperwork. Transporting the goods can be slow, if they are sent by sea. These **delays in foreign trade** mean that exporters often build up **large investments** in inventories and accounts receivable. These working capital investments have to be financed somehow.

The **risk of bad debts** can be greater with foreign trade than with domestic trade. If a foreign customer refuses to pay a debt, the exporter must pursue the debt in the customer's own country, where procedures will be subject to the laws of that country.

How risks can be managed and reduced

A company can reduce its investment in foreign accounts receivable by insisting on **earlier payment** for goods. Another approach is for an exporter to arrange for a **bank to give cash for a foreign debt**, sooner than the exporter would receive payment in the normal course of events. There are several ways in which this might be done.

Where the exporter asks their bank to handle the collection of payment (of a bill of exchange or a cheque) on their behalf, the bank may be prepared to make an **advance** to the exporter against the collection. The amount of the advance might be 80% to 90% of the value of the collection.

Negotiation of bills or cheques is similar to an advance against collection, but would be used where the bill or cheque is payable outside the exporter's country (for example in the foreign buyer's country).

Discounting bills of exchange is where a bank buys the bill before it is due and credits the value of the bill after a discount charge to the company's account.

Export factoring could be considered where the exporter pays for the specialist expertise of the factor in order to reduce bad debts and the amount of investment in foreign accounts receivable.

Documentary credits provide a method of payment in international trade, which gives the exporter a secure risk-free method of obtaining payment. The buyer (a foreign buyer, or a domestic importer) and the seller (a domestic exporter or a foreign supplier) first of all agree a contract for the sale of the goods, which provides for payment through a documentary credit. The buyer then requests a bank in their country to issue a letter of credit in favour of the exporter. The issuing bank, by issuing its letter of credit, guarantees payment to the beneficiary.

Countertrade is a means of financing trade in which goods are exchanged for other goods.

Export credit insurance is insurance against the risk of non-payment by foreign customers for export debts. If a credit customer defaults on payment, the task of pursuing the case through the courts will be lengthy, and it might be a long time before payment is eventually obtained.

Premiums for export credit insurance are however, very high and the potential benefits might not justify the cost.

MCQ bank – Investment decisions

85 C 49%

Return on capital employed = Average annual accounting profits / Average investment

Average annual accounting profits = $(16,500 + 23,500 + 13,500 - 1,500)/4 = \$13,000 \text{ pa.}$

Note accounting profits are *after* depreciation so no adjustment is required.

Average investment = (initial investment + scrap)/2 = $(\$46,000 + \$7,000)/2 = \$26,500$

ROCE = $13,000/26,500 = 49\%$

Syllabus area D1(d)

- 86 A Payback period is the amount of time taken to repay the initial investment.

Time	Profit	Depreciation *	Cash flow	Cumulative cash flow
	\$	\$	\$	\$
0	Investment		(46,000)	(46,000)
1	Cash inflow	16,500	9,750	26,250
2	Cash inflow	23,500	9,750	33,250

* Depreciation = $(\$46,000 - \$7,000) / 4$

Payback period = $1 + (19,750/33,250) = 1.59$ years or 1 year 7 months to the nearest month.

Syllabus area D1(b)

- 87 B 1 is correct as there is no 'cut off' point (unlike the payback period calculation).
2 is incorrect. ROCE is profit based.
3 is correct, and may well help explain ROCE's use in the real world.

Syllabus area D1(d)

- 88 B The \$1,000 is sunk. If the chemical is used in a new project it would save SW Co \$400 that it would otherwise have to spend to dispose of the chemical. This equates to an effective net cash inflow (or, more precisely, the avoidance of an outflow) of \$400. Thus the project appraisal should show an inflow of \$400 in relation to using this chemical.

Syllabus area D1(a)

- 89 C \$20,000

We assume BLW would choose the cheapest source of labour.

Cost to buy in = $\$20 \times 1,000 \text{ hours} = \$20,000$

Cost to divert existing labour = lost contribution + labour cost ie $(\$10 + \$15) \times 1,000 \text{ hours} = \$25,000$

The cheapest alternative is therefore to buy in at a cost of \$20,000.

To calculate how the existing BLW project would suffer as a result of diverting labour, the current labour cost is added back to the lost contribution to give the full impact of diverting labour away from its current role.

Syllabus area D1(a)

- 90 A \$14,000. The current rental cost is \$5,000. The net new rental cost, should the project proceed, would be $(\$17,000 + \$5,000 - \$3,000) = \$19,000$, so an increment of $\$19,000 - \$5,000 = \$14,000$.

Syllabus area D1(a)

- 91 C Option A is a benefit not a drawback. Option B is incorrect. Payback period does not take account of the time value of money. D is incorrect. The calculation is not based on profit. On the assumption that the basic reason for approving a project is that it will increase shareholder wealth, a major drawback of payback period is that it does not attempt to measure the impact on shareholder wealth should the project go ahead.

Syllabus area D1(b)

- 92 A Project screening should be undertaken after stage 1 to sift out unsuitable ideas before further time and money is spent investigating further. Raising finance is impractical before knowing what the funding requirement is. Implementation can only occur once a suitable project has been selected.

Syllabus area D1(a)

93 D 5%. A payback of 20 years suggests net annual inflow of $50,000/20 = \$2,500$ per annum.

Return on capital employed (ROCE) = Average annual accounting profit / Average investment.

Average annual accounting profit = $\$2,500$ cash inflows less depreciation.

Depreciation = $50,000/40 = \$1,250$ per year

So average annual accounting profit = $\$2,500 - \$1,250 = \$1,250$.

Average investment = $(\$50,000 + 0)/2 = \$25,000$

Therefore ROCE = $\$1,250/\$25,000 = 0.05$ or 5% per annum

Syllabus area D1(d)

94 B The cost should not feature in the project appraisal as the accountant is paid anyway ie his salary is not incremental.

Syllabus area D1(a)

MCQ bank – Investment appraisal using DCF

95 D The present value of the annuity = $\$7,000 \times AF_{3-7}$

where AF_{3-7} is the 10% Annuity factor from years 3-7 inclusive.

$$AF_{3-7} = AF_{1-7} - AF_{1-2}$$

$$= 4.868 - 1.736 \text{ (from tables)}$$

$$= 3.132$$

Therefore the present value = $\$7,000 \times 3.132 = \$21,924$

Syllabus area D1(e)

96 C Option 1

Step 1 Calculate the future value of the perpetuity using the cost of capital

$$\$90,000 / 0.1 = \$900,000$$

Step 2 Discount it back to today using a discount factor of 10% at the end of year 2

$$PV = \$900,000 \times 0.826 = \$743,400$$

Option 2

The present value of the lump sum = $\$910,000 \times DF_1$

Where DF_1 is the 1 year 10% discount factor from tables = 0.909

$$\text{So present value of lump sum} = \$910,000 \times 0.909 = \$827,180$$

The lump sum should be chosen because it has a higher net present value.

Syllabus area D1(e)

97 C Remember that a cash outlay or receipt which occurs at the beginning of a time period is taken to occur at the end of the previous year. Therefore an inflow of \$12,000 in advance for 5 years (ie starting now) is taken to occur in years 0, 1, 2, 3 and 4.

NPV at 10%:

Time		\$	DF 10%	PV \$
0	Investment	(40,000)	1	(40,000)
0-4	Net cash inflows	12,000	$1+3.17 = 4.17$	50,040
5	Decommissioning	(15,000)	0.621	(9,315)
	Net present value			725

= \$700 to the nearest \$100

Syllabus area D1(e)

$$\text{IRR} = a + \left[\frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (b - a) \right] \%$$

where a = lower % discount rate

b = higher % discount rate

NPV_A = NPV at $a\%$

NPV_B = NPV at $b\%$

NPV at 10% = \$725 (see question above)

NPV at 15%:

Time		\$	DF 15%	PV \$
0	Investment	(40,000)	1	(40,000)
0-4	Net cash inflows	12,000	1+2.855 =3.855	46,260
5	Decommissioning	(15,000)	0.497	(7,455)
	Net present value			<u>(1,195)</u>

Therefore $\text{IRR} = 10\% + [(725/(725+1,195)) \times (15\% - 10\%)] = 11.9\%$ (12% to the nearest whole %)

Syllabus area D1(f)

- 99 D The project with the highest NPV will maximise shareholder wealth as NPV directly measures the impact on shareholder wealth.

Syllabus area D1(g)

- 100 C It takes into account the time value of money and it considers the whole project.

Statement 1 is not an advantage. The decision rule depends on the shape of the IRR curve. There could be several IRRs and whether the IRR needs to be higher or lower than the cost of capital depends on the project cash flows.

Statement 2 is an advantage. IRR is a discounting technique hence takes into account the time value of money.

Statement 3 is a disadvantage. The 'reinvestment assumption' is a flaw in IRR. There is no reason to suppose that funds generated early on in a project will be reinvested at the IRR after that point. The funds may well be distributed elsewhere.

Statement 4 is an advantage. Unlike payback period, the IRR considers *all* of the future incremental cash flows associated with a decision in its calculation.

Syllabus area D1(f)

- 101 C The NPV will decrease and there will be no change to the IRR.

A higher cost of capital will discount future inflows more heavily, reducing the NPV of the project. The cost of capital does not feature in the calculation of the IRR, only in the decision rule that follows the calculation.

Syllabus area D1(e)(f)

- 102 B The net present value of the agreement is \$26,496, hence:

$$\$26,496 = (\$a \times AF_{1-4}) + 10,000 \quad \text{Where } AF_{1-4} \text{ is the 4 year 8\% annuity factor}$$

$$\$16,496 = \$a \times 3.312 \quad (\text{from tables})$$

$$\$a = \$16,496 / 3.312$$

$$= \$4,981$$

Syllabus area D1(e)

- 103 A The IRR formula requires two NPV calculations at different rates to estimate the IRR.
- B is inaccurate. Linear interpolation is still an estimate. It is not 100% precise.
- C is inaccurate. There may be more than one IRR. It depends on whether the cash flows are conventional or not.
- D is not necessarily true. For example, an unusual project with an initial large inflow followed by years of outflows will have a positive slope.

Syllabus area D1(h)

- 104 A The present value of the holiday home = $\$1.5m \times (DF_5 10\%) = \$1.5m \times 0.621 = \$931,500$

Therefore the present value of the annuity = \$931,500.

$$\$931,500 = \$a \times AF_{0-4}$$

Where AF_{0-4} is the annuity factor from time 0 to time 4

$$AF_{0-4} = 1 + AF_{1-4} = 1 + 3.170 = 4.170$$

$$\text{So } \$931,500 = \$a \times 4.170$$

$$\$a = \$931,500 / 4.170$$

$$= \$223,381 \text{ or } \$223,400 \text{ to the nearest } \$100$$

Syllabus area D1(e)

MCQ bank – Allowing for tax and inflation

- 105 C The asset is purchased on 31 December 20X4 (T0) so the first portion of tax allowable depreciation is accounted for on that date (as this is the end of the year). The amount of the depreciation would be $\$1m \times 25\% = \$250,000$.

Claiming this allowance will save $(\$250,000 \times 30\%) = \$75,000$ tax when it is paid at T1 (one year delay) hence the present value = $\$75,000 \times DF_1 = \$75,000 \times 0.909 = \$68,175$

Syllabus area D2(b)

- 106 B As tax is paid one year in arrears, the \$20,000 and associated tax are treated separately:

$$\text{PV of perpetuity: } \$20,000 \times 1/0.1 = \$200,000$$

$$\text{Less PV of tax: } (\$20,000 \times 30\%) \times (AF_{2-\infty})$$

$$AF_{2-\infty} = (1/0.1) - DF_1 = 10 - 0.909 = 9.091$$

$$\begin{aligned} \text{PV of tax} &= \$20,000 \times 30\% \times 9.091 \\ &\quad \text{After tax} = \underline{\underline{\$145,454}} \end{aligned}$$

Syllabus area D2(b)

- 107 C

	<i>Working capital required (10% × sales)</i>	<i>Increments = cash flow</i>	<i>Discount factor 10%</i>	<i>Present value</i>
\$ To	10,000	(10,000)	1	(10,000.00)
T1	12,500	(2,500)	0.909	(2,272.50)
T2	10,500	2,000	0.826	1,652.00
T3	0	10,500	0.751	7,885.50
				<u><u>(2,735.00)</u></u>

Syllabus area D1(e)

- 108 A The working capital required will inflate year on year, then the inflated amount will be 'returned' at the end of the project:

	<i>Working capital</i>	<i>required (with 10% inflation)</i>	<i>Increments = cash flow</i>	<i>Discount factor 12%</i>	<i>Present value</i>
To		\$ 100,000	(100,000)	1	(\$100,000)
T1		110,000	(10,000)	0.893	(8,930)
T2		0	110,000	0.797	<u>87,670</u> <u>(21,260)</u>

Syllabus area D2(a)

- 109 C \$58,175. As not all cash flows will inflate at the same rate, cash flows will be inflated where necessary and discounted using the money rate.

$$(1 + \text{money rate}) = (1.08) \times (1.02) = 1.1016 \text{ so } m = 10\% \text{ to the nearest whole \%}$$

$$\text{Nominal income} = \$100,000 \times (1 + \text{income inflation}) = \$100,000 \times 1.1 = \$110,000$$

$$\text{Nominal expenses} = \$35,000 \text{ (zero inflation)}$$

$$\text{Therefore NPV} = [(110,000 - 35,000) \times DF_1] - 10,000 \quad \text{where } DF_1 = \text{the 1 year 10\% discount factor (tables)}$$

$$= (75,000 \times 0.909) - 10,000 = \$58,175$$

Syllabus area D2(a)

- 110 C In order to use the perpetuity factor ($1/r$) the annual amount must be constant, so the calculation needs to be done in real terms.

The money cost of capital is given in the question, so the real rate needs to be calculated using:

$$(1 + r) \times (1 + h) = (1 + i) \quad \text{where } r = \text{real rate, } h = \text{inflation, } i = \text{money rate, so}$$

$$(1 + r) \times (1.02) = (1.102)$$

$$(1 + r) = 1.102 / 1.02 = 1.08 \text{ or } 8\%.$$

$$\text{The perpetuity factor from } T2-\infty = (1/r) - DF_1 = (1/0.08) - 0.926 = 11.574$$

$$\text{Therefore the present value} = 10,000 \times 11.574 = \$115,740$$

Syllabus area D2(a)

- 111 A Increased expectation of inflation will have two effects.

- 1 Higher expected nominal cash flow
- 2 Higher nominal discount rate

These will cancel each other out exactly.

Syllabus area D2(a)

- 112 B $(1 + r) \times (1 + h) = (1 + i)$ where $r = \text{real rate, } h = \text{inflation, } i = \text{money rate, so}$
 $(1 + r) \times (1.04) = (1.10)$
 $(1 + r) = 1.10 / 1.04 = 1.058 \text{ or } 5.8\%.$

Syllabus area D2(a)

- 113 D The value of the tax allowable depreciation is $150,000 \times 100\% \times 30\% = \$45,000$ receivable immediately so the net initial outlay = $150,000 - 45,000 = \$105,000$

$$\text{The future value of } 105,000 \text{ in 2 years time (note....'receivable in 2 years....')} \\ = 105,000 \times 1.1^2 = \$127,050.$$

$$\text{The revenue is taxable, so the pre tax contract revenue needs to be } 127,050 / (1 - 0.3) = \$181,500$$

Syllabus area D2(b)

- 114 D The inflation included in the money cost of capital is required by the investors to compensate them for the loss of general purchasing power their money will suffer in the future as a result of investing in the business.

Syllabus area D2(a)

CBE style OTQ bank – Project appraisal and risk

- 115 Hides risk and probably won't actually occur.

Statement 1 is false. As an average the expected value probably won't actually occur in any single event so it does not represent a probable outcome. It is more appropriate for repeated events (for example expected sales each year for many years). By the same logic statement 3 is true.

Statement 2 is true. Expected values fail to show the spread of possible values, therefore hiding the best/worst outcomes from the decision making process.

Statement 4 is false. Risk is calculable (known or estimated probabilities and/or outcomes), uncertainty is not (either probabilities or some outcomes are unknown).

Syllabus area D3(c)

- 116 \$193,050

$$\text{Expected sales} = (20,000 \times 0.6) + (25,000 \times 0.4) = 22,000 \text{ units}$$

$$\text{Expected sales price} = (\$10 \times 0.3) + (\$15 \times 0.7) = \$13.50$$

$$\text{So expected revenue} = 22,000 \text{ units} \times \$13.50 = \$297,000$$

$$\text{Expected margin} = (30\% \times 0.5) + (40\% \times 0.5) = 35\% \text{ therefore costs will be } 1 - 35\% = 65\%$$

$$\text{So expected cost} = 65\% \times \$297,000 = \$193,050$$

Syllabus area D3(c)

- 117 Just under 3 years

Adjusted payback period is payback period based on discounted cash flows:

Time	Cash flow (\$)	DF 8%	Discounted cash flow (\$)	Cumulative discounted cash flow
0	(100,000)		(100,000)	(100,000)
1	40,000	0.926	37,040	(62,960)
2	40,000	0.857	34,280	(28,680)
3	40,000	0.794	31,760	3,080

Syllabus area D3(d)

- 118 70% To force an NPV = 0, the 4 year annuity factor, AF₁₋₄ = 110,000/40,000 = 2.75

Proof: the NPV calculation would be $(2.75 \times 40,000) - 110,000 = 0$

From tables, the 4-year annuity factor closest to 2.75 is 2.743, corresponding to a discount rate of 17%.

In terms of sensitivity: $(17 - 10)/10 = 70\% \text{ sensitivity}$

The cost of capital can therefore increase by 70% before the NPV becomes negative.

Note: alternatively IRR could be estimated to find the 17% instead of tables.

NPV when cost of capital is 18% = $-110,000 + (40,000 \times 2.69) = (2,400)$

$$\text{IRR} = 0.1 + \frac{16,800}{16,800 + 2,400} \times (0.18 - 0.1) = 17\%$$

Syllabus area D3(b)

119

More than one variable can change at a time

'A clear decision rule' is incorrect. There is no decision rule with simulations – it is not an 'optimising' technique

'More than one variable can change at a time' is a clear advantage that simulations have over sensitivity analysis

'Statistically more accurate than other methods' is incorrect. The input variables and distributions are estimates

'Being diagrammatic it is easier to understand' has some validity potentially, but is not necessarily the case.

Syllabus area D3(d)

CBE style OTQ bank – Specific investment decisions

120

The 2-year cycle should be chosen with an equivalent annual cost of \$10,093

Net present cost of 1 year cycle = $20,000 - (10,000 \times 0.909) = \$10,910$ cost

Net present cost of 2 year cycle = $20,000 - [(8,000 - 5,000) \times 0.826] = \$17,522$ cost

EAC 1 year cycle = $\$10,910 / 0.909 = 12,002$

EAC 2 year cycle = $\$17,522 / 1.736 = 10,093$

The 2-year cycle should be chosen with an equivalent annual cost of \$10,093

Syllabus area D4(b)

121

2 only

Statement 1 is incorrect: Lessees acquire the risk and responsibility of ownership with finance leases.

Statement 2 is correct: Finance leases are accounted for as an asset and a payable on the statement of financial position of the lessee.

Statement 3 is incorrect: Finance leases have a primary period covering all or most of the useful economic life of the asset.

Syllabus area D4(a)

122

'No After tax cost of the loan if they borrow and buy'

Interest should not be included as a cash flow as it is part of the discount rate.

As a financing decision the alternatives should be assessed at the after tax cost of borrowing – the risk associated with each is the risk of borrowing (or not), and not related to what is done with the asset.

Syllabus area D4(a)

123

Both are false. A constraint being termed 'soft' means it is internally imposed. It may or may not be flexible so is not always true.

Whether a project may be considered divisible or not depends on the project – for example investing in a machine is unlikely to be divisible (half a machine will not generate half the return), however buying a chain of shops could be divisible; it might be possible to buy half the chain for half the cost and expect half the net present value.

Syllabus area D4(c)

124 **\$13 million**

<i>Project</i>	<i>Initial cost (\$m)</i>	<i>NPV (\$m)</i>	<i>Profitability index*</i>	<i>Ranking</i>
1	40	4	1.10	3
2	30	5	1.167	1
3	50	6	1.12	2
4	60	5	1.08	4

*(npv + initial cost) / initial cost

Investment plan:

	<i>Investment (\$m)</i>	<i>NPV (\$m)</i>
100% of Project 2	30	5
100% of Project 3	50	6
50% of Project 1	20	2
	<u>100</u>	<u>13</u>

Syllabus area D4c

125 \$11 million

Projects 2 and 3 give the highest NPV without breaking the \$100 million constraint.

Syllabus area D4c

126 'Avoiding tax exhaustion '

'Avoiding tax exhaustion ' is potentially a benefit. Tax exhaustion is when a business has negative taxable income so it cannot benefit from tax relief such as tax allowable depreciation. In this case, it may be beneficial to lease the asset from a business that *can* benefit from the tax allowable depreciation and share in that benefit via lower lease payments.

'Attracting lease customers that may not have been otherwise possible' is a potential benefit to a lessor, not a lessee.

'Exploiting a low cost of capital' is a potential benefit for the purchaser, not the lessee.

'Potential future scrap proceeds' is a potential benefit for the purchaser, not the lessee as the lessee is not entitled to scrap proceeds.

Syllabus area D4a

127 'Electric because its equivalent annual benefit is higher '

The NPVs cannot be directly compared as they relate to different time periods. Equivalent annual benefits (EAB) should be compared. This is similar in principle to equivalent annual cost.

$$\text{EAB Gas} = \$50,000 / \text{AF}_{1-5} = 50,000 / 3.993 = \$12,522 \text{ pa}$$

$$\text{EAB Electric} = \$68,000 / \text{AF}_{1-7} = 68,000 / 5.206 = \$13,062 \text{ pa}$$

Therefore electric should be chosen as its equivalent annual benefit is higher.

Syllabus area D4b

128 Higher scrap value

Better company image and efficiency

Statement 1 is a benefit. Scrapped assets will be newer hence worth more.

Statement 2 is a benefit. Newer assets look better, motivate employees and are more efficient.

Statement 3 is not true hence not a benefit. Typically depreciation is higher in earlier years, meaning annual depreciation charges will be higher with a shorter replacement cycle.

Statement 4 is inaccurate hence not a benefit. Although owned for a shorter period, the asset will be replaced so ownership of that type of asset will be indefinite.

Syllabus area D4b

129 1, 2 and 3. Leasing may be possible. A joint venture partner may provide additional funding. Although delaying projects will probably reduce their NPV (time value of money, and competitor response), this may be better than not investing at all.

Syllabus area D4a

Sensitivity analysis

130 C 11.9%

Year	Variable cost \$'000	Discount factor 9%	PV \$'000	Cash inflows \$'000	PV \$'000
1	3,200	0.917	2,934	10,300	9,445
2	3,200	0.842	2,694	10,300	8,673
			NPV = 5,628		NPV = 18,118

Sensitivity of project to sales volume =

$$\frac{1,490}{18,118 - 5,628} \times 100\% = 11.9\%$$

131 D 1.75 years

Year	Net cash flow \$'000	Discount factor 9%	PV \$'000	Cumulative PV \$'000
0	(11,000)	1	(11,000.00)	(11,000.00)
1	7,100	0.917	6,510.70	(4,489.30)
2	7,100	0.842	5,978.20	

$$4,489.30 / 5,978.20 = 0.75$$

Therefore the discounted payback = 1.75 years

132 A 19.2%

Using discount rates of 15% and 20% per the question we have:

Year	Net cash flow \$'000	Discount factor 15%	PV \$'000	Discount factor 20%	PV \$'000
0	(11,000)	1	(11,000)	1	(11,000)
1	7,100	0.870	6,177	0.833	5,914
2	7,100	0.756	5,638	0.694	4,927
			NPV = 815		NPV = (159)

$$IRR = 15 + \left[\frac{815}{815+159} \times (20 - 15) \right] = 19.2\%$$

133 D Both statements are false. Sensitivity analysis does not provide a decision rule. Parameters defining acceptability must be laid down by managers. Another weakness of sensitivity analysis is that it requires that changes in variables are isolated. However, looking at factors in isolation is unrealistic as they are often interdependent.

134 A 1 and 2

The first two statements are true. The IRR ignores the relative sizes of investments. It therefore does not measure the absolute increase in company value, and therefore shareholder wealth, which can be created by an investment.

The IRR method assumes that cash flows can be reinvested to earn a return equal to the IRR of the original project.

IRR (not NPV) is widely used in practice.

NPV is technically superior to IRR.

Trecor Co

135 56%

$$\text{Average investment} = (250,000 + 5,000)/2 = \$127,500$$

$$\text{ROCE} = 71,250/127,500 \times 100 = 56\%$$

136 The first statement is false. ROCE needs to be higher than the target ROCE for the machine purchase to be recommended. The second statement is true. Two (or more) mutually exclusive projects can be compared using ROCE. The project with the highest ROCE should be selected.

137 \$10,547

	Tax allowable depreciation	\$	Tax benefits	\$
1	$250,000 \times 0.25 =$	62,500	$2 \quad 62,500 \times 0.3 =$	18,750
2	$62,500 \times 0.75 =$	46,875	$3 \quad 46,875 \times 0.3 =$	14,063
3	$46,875 \times 0.75 =$	35,156	$4 \quad 35,156 \times 0.3 =$	10,547

138 1 year 11 months

$$\text{Year 1 cumulative balance} = -250,000 + 122,000 = -128,000$$

$$(128,000 / 143,000) \times 12 \text{ months} = 11 \text{ months} \therefore \text{payback is 1 year 11 months}$$

139 IRR ignores the relative sizes of investments

IRR and NPV sometimes give conflicting rankings over which project should be prioritised

Statement 1 is true. The IRR ignores the relative sizes of investments. It therefore does not measure the absolute increase in company value, and therefore shareholder wealth, which can be created by an investment.

Statement 2 is therefore false. When discount rates are expected to differ over the life of the project, such variations can be incorporated easily into NPV calculations, but not into IRR calculations. Therefore statement 3 is also false.

Statement 4 is true. NPV and IRR methods can give conflicting rankings as to which project should be given priority.

BRT Co

140 \$8,487 (or \$8,488)

$$1,600,000 \times \$5 \times 1.03^2 = \$8,487,200 \text{ or}$$

$$1,600,000 \times 5.305 = \$8,488,000 \text{ (if you have rounded the inflated price)}$$

141 \$6,884

$$2,100,000 \times \$3 \times 1.03^3 = \$6,884,180$$

142 \$84

	Tax allowable depreciation		Tax benefits
Year		Year	
1	$2,000,000 \times 0.25 = \$500,000$	2	$\$500,000 \times 0.3 = \$150,000$
2	$500,000 \times 0.75 = \$375,000$	3	$\$375,000 \times 0.3 = \$112,500$
3	$\$375,000 \times 0.75 = \$281,250$	4	$\$281,250 \times 0.3 = 84,375$

- 143 The trainee accountant has used the wrong percentage for the cost of capital - false
As inflated sales and costs have been used, the cost of capital should be the nominal cost of capital (at 12%).
- Ignoring sales after four years underestimates the value of the project - true
Cutting off cash flows after 4 years will underestimate the value of the project as future cash inflows will be ignored.
- The working capital figure in Year 4 is wrong - true
The final year should recover the total working capital and so should be \$750k + \$23k + \$23k + \$24k = \$820k.
- 144 Both statements are true.
When there are **unconventional** cash flow patterns there may be multiple IRRs and so the NPV and IRR decisions may not be the same.
A project is financially viable under the IRR criteria if the IRR is greater than the cost of capital (12% in this case).

145 Calvic Co

Text reference. Capital rationing is covered in Chapter 11.

Top tips. Part (b) can be answered with no reference to the rest of the question. You might choose to do it first and to get these marks before doing the calculations in part (a).

In part (a) show your workings. This will ensure you earn good marks even if you make an arithmetic error.

Easy marks. Part (b) was straightforward and full marks should be attainable for making some obvious discussion points.

Again this is a question where a proforma approach could be used. Once you have your proforma for part (a) set out you should have been able to pick up some easy marks for costs and annuity factors.

There was a gift of a mark in part (a) for making a recommendation. Make a recommendation based on your calculations. As long as you recommend the lowest cost then the mark is yours!

Marking scheme

		Marks
(a)	Servicing costs	1
	Cleaning costs	1
	Present values of total costs	1
	Present values of trade-in values	2
	Net present values of costs of each cycle	3
	Annuity factors	1
	Equivalent annual costs	2
	Recommendation	1
		12
(b)	Single-period capital rationing	2 - 3
	Project divisibility	3 - 4
	Investment of surplus funds	3 - 4
	Maximum	Maximum
		8
		20

(a)

Replace every year

Year	0	1
Initial cost	(15,000)	
Trade-in value		11,250
Service cost		(1,000)
Cleaning cost		(500)
Net cost	(15,000)	9,750
Discount factor @ 10%	1	0.909
Present value	(15,000)	8,863
NPV	(6,137)	
Annuity factor	0.909	
Equivalent annual cost	(6,751) pa	

Replace every 2 years

Year	0	1	2
Initial cost	(15,000)		
Trade-in value			9,000
Service cost		(1,000)	(1,400)
Cleaning		(500)	(625)
Net cost	(15,000)	(1,500)	6,975
Discount factor 10%	1	0.909	0.826
Present value	(15,000)	(1,364)	5,761
NPV	(10,603)		
Annuity factor	1.736 for 2 years		
Equivalent annual cost	(6,108) pa		

Replace every 3 years

Year	0	1	2	3
Initial cost	(15,000)			
Trade-in value				6,200
Service cost		(1,000)	(1,400)	(1,960)
Cleaning cost		(500)	(625)	(781)
Net cost	(15,000)	(1,500)	(2,025)	3,459
Discount factor @ 10%	1	0.909	0.826	0.751
Present value	(15,000)	(1,364)	(1,673)	2,598
NPV	(15,439)			
Annuity factor	2.487 for 3 years			
Equivalent annual cost	(6,208) pa			

As the lowest cost option, the decision should be made to replace every two years.

- (b) The net present value decision rule is to invest in all projects that have a **positive** net present value. By following this decision rule, managers **will maximise the value of a company** and therefore maximise the **wealth of ordinary shareholders**, which is a primary objective of financial management. Even when capital is rationed, it is still essential to be able to offer advice on which capital investment projects should be selected in order to secure the **maximum return** for the investing company, ie the maximum overall net present value.

Single-period capital rationing

The approach to solving single-period capital rationing problems depends on whether projects are divisible or not. A **divisible project** is one where a partial investment can be made in order to gain a pro rata net present value. For example, investing in a forest is a divisible project, since the amount of land purchased can be varied according to the funds available for investment (providing the seller agrees to a partial sale, of course). A non-divisible project is one where it is not possible to invest less than the full amount of capital. When building an oil refinery, for example, it is not possible to build only one part of the overall facility.

Where projects are divisible, the objective of maximising the net present value arising from invested funds can be achieved by **ranking projects** according to their profitability index and investing sequentially in order of decreasing profitability index, beginning with the highest, assuming that each project can be invested in only once, ie is non-repeatable.

The **profitability index** can be defined as net present value divided by initial investment. Ranking projects by profitability index is an example of **limiting factor analysis**. Because projects are divisible, there will be no investment funds left over: when investment funds are insufficient to for the next ranked project, part of the project can be taken on because it is divisible.

When projects are non-divisible, the objective of maximising the net present value arising from invested funds can be achieved by calculating the net present value arising from different combinations of projects. With this approach, there will usually be some surplus funds remaining from the funds initially available.

The investment of surplus funds

When investigating combinations of non-divisible projects in order to find the combination giving rise to the highest net present value, any **return from investing surplus funds is ignored**. The net present value analysis has been based on the company's average cost of capital and it is unlikely that surplus funds can be invested in order to earn a return as high as this.

Investment of surplus funds in, for example, the money markets would therefore be an investment project that would be rejected as having a negative net present value, or an internal rate of return less than the company's average cost of capital if using IRR to assess investments projects. However, it is **good working capital management** to ensure that liquid funds are invested to earn the highest available return, subject to any risk constraints, in order to increase overall profitability.

146 Project E

Text references. NPV and inflation and tax are covered in Chapters 8 and 9. Payback is covered in Chapter 7.

Top tips. Part (a) is a fairly straightforward NPV question if you organise your workings. Set up an NPV proforma and calculate the inflated sales values and costs in separate workings. Remember that if inflation is 5% in year 1 (ie multiply sales by 1.05) then in year 2 the sales will need to be multiplied by 1.05^2 and so on. The tax allowable depreciation should be also be calculated in the workings. In part (b), don't forget to comment on your calculation.

Easy marks. There are easy marks in part (a) for calculations by following the proforma approach. Don't forget to comment on the financial acceptability of the project.

ACCA examination team's comments. The examination team said that most students did well on part (a) of this question. However, some students used a corporation tax rate of 30% instead of 28%. Make sure that you read the question carefully! Also, some students did not put tax liabilities and benefits one year in arrears. The examination team also said that credit was given for including scrap value whether it was taken as a year four or year five cash flow. But remember that scrap value income is not subject to corporation tax.

Marking scheme

	Marks
(a) Sales income	1
Inflation of sales income	1
Variable cost	1
Inflation of variable cost	1
Inflated fixed costs	1
Tax liability	1
Timing of tax liability	1
Tax allowable depreciation years 1 – 3	1
Balancing allowance	1
Tax allowable depreciation tax benefits	1

Scrap value	1
Calculation of present values	1
Calculation of NPV	1
Comment on financial acceptability & that E must be undertaken	2
	<u>15</u>
(b) Calculation of payback period	2
Discussion of payback period	3
	<u>5</u>
	<u>20</u>

As inflation rates differ for revenue and cost, nominal cash flows (ie including inflation) need to be calculated and discounted at the nominal rate (also including inflation).

	Year 0 \$'000	Year 1 \$'000	Year 2 \$'000	Year 3 \$'000	Year 4 \$'000	Year 5 \$'000
Sales (W1)		5,670	6,808	5,788	6,928	
Variable cost (W2)		(3,307)	(4,090)	(3,514)	(4,040)	
Fixed costs (W3)	_____	(776)	(803)	(832)	(861)	_____
Taxable cash flow		1,587	1,915	1,442	2,027	
Taxation			(444)	(536)	(404)	(568)
Capital expenditure	(5,000)					
Scrap value					400	
Tax benefit of tax depn (W4)	(5,000)	1,587	350	263	197	479
Discount factors @ 13%	1	0.885	0.783	0.693	0.613	0.543
Present value	<u>(5,000)</u>	<u>1,405</u>	<u>1,426</u>	<u>810</u>	<u>1,361</u>	<u>(48)</u>

$$\text{Net present value} = -5,000 + 1,405 + 1,426 + 810 + 1,361 - 48 = (46)$$

The net present value is negative and the investment is not financially worthwhile. However, the board have decided that it is strategically important to undertake this project.

Workings

(1) Sales

	Volume	Price	Inflation	Revenue
		\$		\$
Year 1	12,000 ×	450 ×	1.05	5,670,000
Year 2	13,000 ×	475 ×	1.05 ²	6,807,938
Year 3	10,000 ×	500 ×	1.05 ³	5,788,125
Year 4	10,000 ×	570 ×	1.05 ⁴	6,928,386

(2) Variable costs

	Volume	Price	Inflation	Revenue
		\$		\$
Year 1	12,000 ×	260 ×	1.06	3,307,200
Year 2	13,000 ×	280 ×	1.06 ²	4,089,904
Year 3	10,000 ×	295 ×	1.06 ³	3,513,497
Year 4	10,000 ×	320 ×	1.06 ⁴	4,039,926

(3) Fixed costs

Fixed costs \$750,000 per year inflating at 3.5%

Year		Fixed costs (\$)
1	750×1.035	776,250
2	750×1.035^2	803,419
3	750×1.035^3	831,538
4	750×1.035^4	860,642

(4) Tax allowable depreciation tax benefits

Year		Tax allowable depn (\$)	Tax benefit @ 28% (\$)
1	$5,000,000 \times 25\%$	1,250,000	350,000
2	$1,250,000 \times 75\%$	937,500	262,500
3	$937,500 \times 75\%$	703,125	196,875
4	Balancing charge	1,709,375	478,625
Scrap value		400,000	
		<u>5,000,000</u>	

Tax benefits and tax charges affect the following period since tax is paid in arrears.

- (b) Assuming that cash flows occur evenly throughout the year:

$$\text{Contribution per unit} = \$3.00 - \$1.65 = \$1.35$$

$$\text{Total contribution} = 20,000 \text{ units} \times \$1.35 = \$27,000 \text{ per year}$$

$$\text{Annual cash flow} = \$27,000 - \$10,000 = \$17,000$$

$$\text{Payback} = \$50,000 / \$17,000 = 2.9 \text{ years}$$

This **exceeds** the company's **hurdle payback period** of two years. Payback is often used as a first screening method. By this, we mean that the first question to ask is: 'How long will it take to pay back its cost?'

Umunat has a **target payback**, and so it might be tempted to reject this project. However, a project should not be evaluated on the basis of payback alone. If a project gets through the payback test, it ought then to be evaluated with a more sophisticated investment appraisal technique, such as NPV. Payback ignores the **timing of cash flows** within the payback period, the cash flows **after the end** of payback period and therefore the total project return. It also ignores the **time value of money** (a concept incorporated into more sophisticated appraisal methods).

147 AGD Co

Text references. Leasing is covered in Chapter 11.

Top tips. This question is in three parts and each part of the question could be answered separately.

Easy marks. Part (b) allows you to list what you know of both types of lease but you need to note the differences as required in the question. Look at using pro forma workings for the investment appraisal in part (a). Part (c) is straightforward regurgitation of textbook knowledge.

ACCA examination team's comments. While many candidates made errors in this question, answers were usually of a satisfactory overall standard. Common errors included timing the investment when borrowing to buy as occurring at the end of the first year, omitting the tax savings on the maintenance costs incurred by buying the asset, and omitting the tax savings on the lease rental payments.

The overall standard of answers to part (b) was not strong and many candidates used a 'double-list' approach that supports contrast rather than discussion. A degree of confusion between finance leasing and lease-purchase was in evidence, but this was dealt with sympathetically. In part (c) many students were not able to explain the difference between risk and uncertainty in investment appraisal.

Marking scheme

	Marks
(a) Purchase price	1
Sale proceeds	1
Tax allowable depreciation and balancing allowance	2
Tax allowable depreciation tax benefits	1
Maintenance costs after tax	2
PV of borrowing to buy	1
Lease rentals	1

Lease rental tax benefits	1
PV of leasing	1
Selection of cheapest option	1
	12
(b) Explanation and discussion	
Finance lease	2-3
Operating lease	2-3
	Maximum
(c) Risk and uncertainty	5
	3
	<u>20</u>

(a)	(i)	Present value of purchase costs	Year 0	Year 1	Year 2	Year 3	Year 4
			\$'000	\$'000	\$'000	\$'000	\$'000
<i>Cash outflows</i>							
		Capital costs	(320)				
		Annual maintenance costs		(25)	(25)	(25)	(25)
			<u>(320)</u>	<u>(25)</u>	<u>(25)</u>	<u>(25)</u>	<u>0</u>
<i>Cash inflows</i>							
		Disposal proceeds				50	
		Taxation (at 30% in following year)			8	8	8
		Tax allowable depn (W)			24	18	39
			<u>—</u>	<u>—</u>	<u>32</u>	<u>76</u>	<u>47</u>
		Net cash flows	(320)	(25)	7	51	47
		Discount at 7%	1.000	0.935	0.873	0.816	0.763
		PV of cash flow	<u>(320)</u>	<u>(23)</u>	<u>6</u>	<u>42</u>	<u>36</u>
		NPV of cash flow	(\$259k)				

Working

Tax allowable depreciation

		Tax Allowable depn \$'000	Tax benefit \$'000	Year of cash flow
Initial investment	320			
Allowances at 25% pa on a reducing balance basis over 3 years				
Year 1	(80)	(80)	24	Y2
	<u>240</u>			
Year 2	(60)	(60)	18	Y3
	<u>180</u>			
Year 3				
Proceeds on sale	(50)			
Balancing allowance	130		39	Y4

(ii) Present value of leasing costs	Year 0 \$'000	Year 1 \$'000	Year 2 \$'000	Year 3 \$'000	Year 4 \$'000
<i>Cash outflows</i>					
Annual lease rentals	<u>(120)</u>	<u>(120)</u>	<u>(120)</u>	<u>(120)</u>	<u>(120)</u>
<i>Cash inflows</i>					
Taxation (at 30% in following year) – tax deduction for lease rentals			36	36	36
Net cash flows	<u>(120)</u>	<u>(120)</u>	<u>(84)</u>	<u>36</u>	<u>36</u>
Discount at 7%	<u>1.000</u>	<u>0.935</u>	<u>0.873</u>	<u>0.816</u>	<u>0.763</u>
PV of cash flow	<u>(120)</u>	<u>(112)</u>	<u>(73)</u>	<u>29</u>	<u>27</u>
NPV of cash flow		(\$249k)			

Therefore the machine should be **leased** rather than purchased as the NPV of the cost is lower.

(b) Key differences between operating and finance leases

Finance lease

A finance lease is an agreement between the user of the leased asset and a provider of finance that covers the majority of the asset's useful life.

Key features of a finance lease

- (i) The provider of finance is usually a **third party finance house** and not the original provider of the equipment.
- (ii) The **lessee is responsible for the upkeep**, servicing and maintenance of the asset.
- (iii) The lease has a **primary period**, which covers all or most of the useful economic life of the asset. At the end of the primary period the lessor would not be able to lease the equipment to someone else because it would be worn out.
- (iv) It is common at the end of the primary period to allow the lessee to continue to lease the asset for an indefinite **secondary period**, in return for a very low nominal rent, sometimes known as a 'peppercorn' rent.
- (v) The lessee bears most of the risks and rewards and so the asset is shown on the lessee's statement of financial position.

Operating leases are rental agreements between a lessor and a lessee

Key features of an operating lease

- (i) The lessor supplies the equipment to the lessee.
- (ii) The lessor is responsible for the upkeep, servicing and maintenance of the asset.
- (iii) The lease period is fairly short, less than the expected economic life of the asset. At the end of one lease agreement the lessor can either lease the same equipment to someone else and obtain a rent for it or sell it second-hand.
- (iv) The asset is not shown on the lessee's statement of financial position.

(c) Risk and uncertainty

Risk can be applied to a situation where there are several possible outcomes and, on the basis of past relevant experience, probabilities can be assigned to the various outcomes that could prevail. The risk of a project increases as the **variability of returns** increases.

Uncertainty can be applied to a situation where there are several possible outcomes but there is little past relevant experience to enable the probability of the possible outcomes to be predicted. Uncertainty increases as the **project life** increases.

148 Basril Co

Text references. Capital rationing is covered in Chapter 11.

Top tips. Calculate the NPVs for each project first and then look at the best combination of divisible or indivisible projects.

Easy marks. These can be achieved by setting out the correct format for calculating NPVs.

ACCA examination team's comments. This question asked for optimal selection under capital rationing. Good answers calculated the NPV and profitability index, and gave the optimum investment schedule and total NPV for the cases of divisible and non-divisible projects. Errors included: failing to calculate profitability indexes, not calculating the total NPV (even though required by the question), failing to account correctly for inflation in the case of the project where real cash flows were provided (inflating real cash flows to money terms or deflating the nominal rate were both acceptable), and using annuity factors rather than discount factors in calculations. Part (d) asked for an explanation, with examples, of 'relevant cost' in the context of investment appraisal. Weaker answers showed a lack of understanding of cost classification.

(a)

	<i>Project 1</i>	<i>12% discount factor</i>	\$
Initial investment	(300,000)	1	(300,000)
Year 1	85,000	0.893	75,905
Year 2	90,000	0.797	71,730
Year 3	95,000	0.712	67,640
Year 4	100,000	0.636	63,600
Year 5	95,000	0.567	<u>53,865</u>
			<u>32,740</u>
Profitability index	332,740/300,000		1.11

	<i>Project 2</i>	<i>12% discount factor</i>	\$
Initial investment	(450,000)	1	(450,000)
Year 1	140,800	0.893	125,734
Year 2	140,800	0.797	112,218
Year 3	140,800	0.712	100,250
Year 4	140,800	0.636	89,549
Year 5	140,800	0.567	<u>79,834</u>
			<u>57,585</u>
Profitability index	507,585/450,000		1.13

	<i>Project 3</i>	<i>12% discount factor</i>	\$
Initial investment	(400,000)	1	(400,000)
Year 1 ($120,000 \times 1.036$)	124,320	0.893	111,018
Year 2 ($120,000 \times 1.036^2$)	128,796	0.797	102,650
Year 3	133,432	0.712	95,004
Year 4	138,236	0.636	87,918
Year 5	143,212	0.567	<u>81,201</u>
			<u>77,791</u>
Profitability index	477,791/400,000		1.19

The most profitable projects are Projects 3 and 2, so if they are **divisible** it is suggested that Basril invests \$400k in Project 3 for an NPV of \$77,791, and the remaining \$400k in Project 2 for an NPV of $400/450 \times \$57,585 = \$51,187$.

(b) If the projects are **indivisible**, then Basril can either invest in Project 1 + Project 2 at a cost of \$750,000, or Project 1 + Project 3 at a cost of \$700,000 (Project 2 + Project 3 would cost too much). The NPV of 1 + 2 = $\$32,740 + \$57,584 = \$90,324$. The NPV of 1 + 3 = $\$32,740 + \$77,791 = \$110,531$. Therefore the best combination is Projects 1 and 3.

(c) **Cash shortages**

A period of capital rationing is often associated with more general problems of cash shortage. Possible reasons for this include the following.

- (i) The business has become **loss making** and is unable to cover the depreciation charge. Since one purpose of the depreciation charge is to allow for the cost of the assets used in the statement of profit or loss, the implication is that there will be insufficient cash with which to replace these assets when necessary.
- (ii) High inflation may mean that even though the business is profitable in historical cost terms, it is still failing to **generate sufficient funds** to replace assets.
- (iii) If the business is growing it may face a **shortage of working capital** with which to finance expansion, and this may result in a period of capital rationing.
- (iv) If the business is seasonal or cyclical it may **face times of cash shortage** despite being fundamentally sound. In this situation, there may be a periodic need for capital rationing.
- (v) A **large one-off item of expenditure** such as a property purchase may mean that the company faces a temporary shortage of cash for further investment.

Investment opportunities

A further reason for capital rationing arises in the situation where the company has **more investment opportunities** available than the **funds allocated** to the capital budget permit. This means that projects must be ranked for investment, taking into account both financial and strategic factors.

(d) When appraising an investment project, it is essential that only those cash flows relevant to the project be taken into account, otherwise an incorrect investment decision could be made. A 'relevant cash flow' is an incremental cash flow that arises or changes as a direct result of the investment being made. Some costs will be sunk before an investment decision is made. An example would be research and development or market research costs into the viability of a new product. Once incurred, such costs become irrelevant to the decision as to whether or not to proceed, and so should be excluded from the analysis. Cash flows that would be relevant include an increase in production overheads or labour costs, new purchases that are necessary, and any incremental tax effects. It is important to note that any interest payments on the finance for a new project are relevant to the project decision, but are not taken into account in any NPV calculation. The interest payments will already be 'built in' to the calculation in the discount factor that is being applied.

149 Filtrex Co

Text references. Capital rationing is covered in Chapter 11.

Top tips. Part (a)(i) of the question can be approached by means of the profitability index (PI); the optimal mix of projects can then be found by trial and error. In addition you need to be clear about mutual exclusivity and indivisibility. Mutual exclusivity means that if you choose one project, you cannot choose other projects with which the chosen project is mutually exclusive. Indivisibility means that you cannot carry out part of a project. It is all or nothing.

In part (b) it is helpful to consider the situation from the point of view of developing the projects themselves and in terms of alternative sources of funds. Part (c) demonstrates why capital rationing may be a matter of choice; certain sources of funds may not be felt desirable and projects have to be properly controlled.

(a) (i) **Profitability index**

When resources are limited, the aim must be to maximise the productivity of the scarce resource, in this case capital. It is therefore helpful to calculate the **profitability index (PI)** for each project to determine which delivers the most NPV per dollar of investment.

<i>Project</i>	<i>Outlay</i>	<i>NPV</i>	<i>PI(NPV/Outlay)</i>
	\$	\$	
A	150,000	65,000	0.43
B	120,000	50,000	0.42
C	200,000	80,000	0.40
D	80,000	30,000	0.38
E	400,000	120,000	0.30

On this basis, project A is the most attractive since it shows the highest PI, and project E is the least attractive. Since the projects are not divisible and projects A and C are mutually exclusive it is not possible simply to work down the rankings to determine the optimum combination. Instead this must be done algebraically or by trial and error. Various combinations of projects can be evaluated using the latter approach.

	<i>Outlay</i>	<i>NPV</i>
	\$	\$
A, B, D	350,000	145,000
B, C, D	400,000	160,000
E	400,000	120,000

It appears that the **optimum combination** of projects is B, C and D. As well as delivering the highest NPV it also has the **benefit that all the funds available** for investment are used and Filtrex does not face the choice between investments showing a poorer return or returning excess funds to its shareholders.

(ii) **Useful further information**

- (1) The **possibility of raising additional finance** and at what cost.
- (2) If **rationing** is to continue, then the **effect on the NPV of postponing projects becomes relevant**. If all the projects are equally postponable then Filtrex should select those which provide the fastest flow of funds in order to finance those which have been postponed as quickly as possible.
- (3) It has been assumed that all the projects carry a **similar degree of risk**. If this is not the case then Filtrex should allow for this, for example by the use of sensitivity analysis in its evaluations.
- (4) It may be that some of the projects carry a **greater strategic significance** than others. Information on this area should also be taken into account in the investment decision.

(b) **Further opportunity**

Filtrex might consider some of the **following options** as a means of exploiting more of these opportunities.

(i) **Sale of patent rights**

It could accept that it will be **unable to manage** all the **later stages** of development itself and could decide to sell some of the patent rights once they have been obtained.

(ii) **Joint ventures**

It could seek **joint venture partners** to share in the development.

(iii) **Licensing or franchising**

Some of the areas may be appropriate **for licensing or franchising** with a royalty being payable to Filtrex. This in turn could help to finance the development of those projects which are retained for in-house promotion.

(iv) **Additional finance**

It could seek additional finance in the following forms.

- (1) **Further equity** by way of a rights issue or, by agreement with existing shareholders, via a public issue.
- (2) **Debt finance secured** on the **assets**. This should be possible since the company is currently ungeared.
- (3) **Debt finance secured** against the **working capital** ie factoring or invoice discounting.
- (4) It may be possible to arrange a **sale and leaseback** of some of the company's property or equipment.
- (5) Depending on its location and business there may be the possibility of applying for **grant aid**, for example from one of the EU regional development funds.

- (c) **Hard capital rationing** describes the situation when a firm is prevented from undertaking attractive investments for reasons external to the firm.

Soft capital rationing describes the position when management places a limit on the amount of capital investment that may be undertaken: it is due to factors internal to the firm.

Reasons for the deliberate restriction of capital expenditure include the following.

- (i) Management may decide to **limit the funds available** to those which can be generated from retained earnings, for the following reasons.
 - (1) They **do not wish to issue further equity** to prevent outsiders from gaining control of the business.
 - (2) They **do not wish to raise further equity** to avoid earnings dilution.
 - (3) They **do not wish to commit the company** to meeting large fixed interest payments on additional debt capital.
- (ii) **A capital budgeting procedure** may be used to ensure that only the best projects are undertaken.
- (iii) The **number of projects** undertaken may be **restricted** in order to ensure that there are adequate management resources available for them to realise their full potential.

150 Warden Co

Text references. NPV and IRR are covered in Chapter 8. Sensitivity analysis is covered in Chapter 10.

Top tips. Part (a) is a fairly straightforward NPV calculation without many of the difficulties that can be present. Ensure that you recover the working capital at the end of the five years and that the tax on profits is paid one year in arrears.

Easy marks. There are easy marks available in the calculations in parts (a) and (b) and for the explanation of sensitivity analysis in part (c).

Marking scheme

		Marks
(a)	Sales revenue	0.5
	Variable costs	0.5
	Fixed costs	0.5
	Tax liabilities	1
	Working capital recovered	1
	Scrap value	0.5
	Initial working capital	1
	Initial investment	0.5
	Discount factors	0.5
	NPV calculation	1
	Decision as to financial acceptability	<u>1</u>
		8
(b)	Calculation of revised NPV	1
	Calculation of IRR	2
	Comment on financial acceptability	<u>1</u>
(c)	(i) Explanation of sensitivity analysis	2
	(ii) After-tax present value of sales revenue	2
	Selling price sensitivity	2
	Discount rate sensitivity	1
	Comment on findings	<u>1</u>
		4
		<u>6</u>
		<u><u>20</u></u>

(a) Calculation of NPV

Year	0	1	2	3	4	5	6
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Sales revenue		1,600	1,600	1,600	1,600	1,600	1,600
Variable costs		(1,100)	(1,100)	(1,100)	(1,100)	(1,100)	(1,100)
Fixed costs		(160)	(160)	(160)	(160)	(160)	(160)
Before-tax cash flows		340	340	340	340	340	340
Taxation at 30%			(102)	(102)	(102)	(102)	(102)
Capital investment	(800)						40
Working capital	(90)						90
Project cash flows	(890)	340	238	238	238	368	(102)
Discount factor 11%	1.000	0.901	0.812	0.731	0.659	0.593	0.535
Present value	(890)	306	193	174	157	218	(55)
NPV	103						

The net present value is positive and therefore the project is financially acceptable.

(b) Calculation of IRR

Year	0	1	2	3	4	5	6
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Project cash flows	(890)	340	238	238	238	368	(102)
Discount factor 17%	1.000	0.855	0.731	0.624	0.534	0.456	0.390
Present value	(890)	291	174	149	127	168	(40)
NPV	(21)						

$$\text{IRR} \approx a + \left(\left(\frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \right) (b - a) \right) \%$$

$$\text{IRR} \approx 11 + \left[\frac{103}{103 + 21} \times (17 - 11) \right]$$

$\approx 15.98\%$, say 16%

As the internal rate of return is greater than the cost of capital, the project is financially acceptable to Warden Co.

Note: Other discount rates may give a slightly different IRR, but it should still be around 16%.

- (c) (i) The sensitivity of an investment project to a change in a variable can be calculated as the ratio of the NPV to the present value (PV) of the variable. This shows the relative change in the variable which will make the NPV of the project zero. Sensitivity analysis can be used to calculate the key variable for a project and show the area on which management should focus in order to make the project successful.

(ii) **Selling price sensitivity**

As sales revenue is a five-year annuity the present value can be calculated as follows:

$100,000 \text{ units} \times \$16 \times \text{Five year annuity factor at } 11\%$

$$100,000 \times \$16 \times 3.696 = \$5,913,600$$

The tax liability from this revenue also needs to be considered as the NPV includes the tax paid.

Tax liability (before taking account of paying in arrears) = $\$5,913,600 \times 30\% = \$1,774,080$

Discounting by one year to give PV of tax liability = $\$1,774,080 \times 0.901 = \$1,598,446$

Total PV relating to sales revenue = $\$5,913,600 - \$1,598,446 = \$4,315,154$

Sensitivity of project to sales revenue = $(103,000 / 4,315,154) \times 100\% = 2.4\%$

Discount rate sensitivity

Change in discount rate required for NPV to be zero = $16 - 11 = 5\%$

Sensitivity of project to the discount rate = $(5/11) \times 100\% = 45.5\%$

As can be seen from the analysis above the critical variable is the selling price as the investment is significantly more sensitive to changes in the sales price than the discount rate.

151 BQK Co

Text references. NPV is covered in Chapters 8 and 9 and ARR (ROCE) in Chapter 7. The impact of high interest rates is covered in Chapters 2 and 8.

Top tips. Part (a) is a fairly straightforward NPV calculation without many of the difficulties that can be present. Ensure that you inflate each item of cost and revenue at the correct rates and the tax on profits is paid one year in arrears. For part (b), you may not have studied the answer to this question, but apply your common sense and you should be able to obtain good marks.

Easy marks. There are plenty of easy marks for calculations in this question.

ACCA examination team's comments. Many candidates gained high marks in part (a) of this question. Some answers mistakenly used the real after-tax cost of capital of 9%, or tried to calculate another discount rate altogether using the Fisher equation, but all that was needed was to use the 12% rate provided. Some answers chose not to comment on the financial acceptability of the investment project and so lost a relatively straightforward mark.

Marking scheme

	Marks
(a) Sales income without inflation	1
Inflation of sales income	1
Variable costs without inflation	1
Inflation of variable costs	1
Inflated fixed costs	1
Calculation of tax allowable depreciation	1
Correct use of tax allowable depreciation	1
Calculation of tax liabilities	1
Correct timing of tax liabilities	1
Selection of correct discount rate	1
Selection of discount factors	1
Calculation of net present value	1
Comment on financial acceptability	1
	13
(b) Customer financing costs	2-3
Company financing costs	2-3
Effect on investment appraisal process	2-3
	Maximum
	<u>7</u>
	<u>20</u>

(a) Present value of cash flows

Year	0 \$'000	1 \$'000	2 \$'000	3 \$'000	4 \$'000	5 \$'000
Capital cost	(4,000)					
Sales revenue (W1)		5,614	7,214	9,015	7,034	
Variable costs (W2)		(3,031)	(3,931)	(5,135)	(4,174)	
Fixed costs*		(1,530)	(1,561)	(1,592)	(1,624)	
Taxable cash flow		1,053	1,722	2,288	1,236	
Tax liabilities			(316)	(517)	(686)	(371)
TAD tax benefits**			300	300	300	300
After-tax cash flow		1,053	1,706	2,071	850	(71)
Discount at 12%	1	0.893	0.797	0.712	0.636	0.567
Present values	(4,000)	940	1,360	1,475	541	(40)
NPV	276					

This project has a positive NPV which indicates it should be undertaken.

*Fixed costs are inflated by 2% year on year.

**TAD tax benefits = Purchase cost \$4,000k / 4 years × 30%

Workings

1 Sales revenue

Year	1	2	3	4
Small houses selling price (\$'000/house)	200	200	200	200
Small houses sales quantity	15	20	15	5
Large houses selling price (\$'000/house)	350	350	350	350
Large houses sales quantity	7	8	15	15
Total sales revenue (nearest \$'000)	5,450	6,800	8,250	6,250
Inflated sales revenue (\$'000/year) – sales revenue × 1.03n	5,614	7,214	9,015	7,034

Year	1	2	3	4
Small houses selling price (\$'000/house)	100	100	100	100
Small houses sales quantity	15	20	15	5
Large houses selling price (\$'000/house)	200	200	200	200
Large houses sales quantity	7	8	15	15
Total sales revenue (nearest \$'000)	2,900	3,600	4,500	3,500
Inflated sales revenue (\$'000/year) – sales revenue $\times 1.045n$	3,031	3,931	5,135	4,174

(b) Impact of a substantial rise in interest rates on BQK's financing costs

A substantial increase in interest rates will cause BQK's borrowing costs to rise. The company's cost of debt will increase as loans require higher interest payments. This will in turn cause the company's weighted average cost of capital (WACC) to increase – the more the company's capital structure consists of debt, the more the WACC will be affected.

Ultimately, the increase in interest rates will also cause the cost of equity to rise. This is shown in the CAPM formula: the cost of equity is linked to the risk-free rate of return at any given time, and the risk-free rate of return (the rate of return on government securities, for example), varies in accordance with the prevailing interest rate. This should have an even greater impact on the company than the increase in the cost of debt.

Impact of a substantial rise in interest rates on customers' financing costs

BQK's customers would be financing the purchase of their houses through long-term mortgages. As the rate of interest rises, existing and potential customers' borrowing costs will increase, making the house purchase more expensive.

Impact on the capital investment appraisal process

- BQK is likely to use the WACC as the discount rate to be applied in evaluating investment decisions. As the WACC increases in response to the rise in interest rates, the present value of investment projects will decrease. As a result, BQK is likely to invest in less projects – projects which, at times of lower interest rates, would have been attractive may now be deemed unsuitable.
- BQK will find it more difficult to sell houses, as the higher mortgage costs put off potential house-buyers.
- To make certain investment projects attractive, BQK may raise house prices. However, this is likely to further reduce its volume of potential sales.
- Construction and infrastructure costs may also increase, as suppliers look to pass on their higher borrowing costs.

In summary, a substantial rise in interest rates is likely to reduce BQK's annual profits. BQK will need to consider a longer time period when appraising investments.

152 Uftin Co

Text references. Net present value is covered in Chapters 8 and 9 and incorporating risk into investment appraisal is covered in Chapter 10.

Top tips. As usual, you need to lay out a proforma for the NPV calculation and show your workings underneath. The main task is to deal with the inflation and the tax allowable depreciation.

Easy marks. Part (a) is full of easy calculation marks! Part (b) is also a gift as you can pick any two of the revisions to discuss so you can pick the two that you feel most confident about.

Marking scheme

		Marks
(a)	Sales revenue	1
	Inflated sales revenue	1
	Inflated variable costs	1
	Inflated fixed costs	1
	Excluding interest payments	1
	Tax allowable depreciation	1
	Balancing allowance	1
	Tax liabilities	1
	Timing of tax liabilities	1
	Net present value	1
	Comment on financial acceptability	1
		11
(b)	Explanation of first revision	1-3
	Explanation of second revision	1-3
		Maximum
(c)	Discussion of two methods, 2-3 marks per method	Maximum
		5
		<u>20</u>

- (a) As inflation rates differ for revenue and cost, nominal cash flows (ie including inflation) need to be calculated and discounted at the nominal rate (also including inflation).

	0	1	2	3	4	5
		\$'000	\$'000	\$'000	\$'000	\$'000
Revenue	W1	2,475	2,714	4,413	4,775	
Variable Cost	W2	(1,097)	(1,323)	(2,084)	(2,370)	
Fixed cost	W3	(155)	(159)	(164)	(169)	
Before-tax cash flows		1,223	1,232	2,165	2,236	
Taxation at 22%			(269)	(271)	(476)	(492)
Investment		(1,800)				
TAD	W4		99	74	56	167
Net cash flow		(1,800)	1,223	1,062	1,968	1,816
12% discount factor (tables)		1	0.893	0.797	0.712	0.636
Present value		<u>(1,800)</u>	<u>1,092</u>	<u>846</u>	<u>1,401</u>	<u>1,154</u>
						<u>(184)</u>

Net present value = total of the present value line = \$2,509k. As this is positive, the proposal is financially acceptable and should go ahead.

Workings

1 Revenue

	1	2	3	4
	Price (Current terms) (\$)	25	25	26
Inflation factor	$\times (1.042)$	$\times (1.042)^2$	$\times (1.042)^3$	$\times (1.042)^4$
Inflated price (\$)	$= 26.05$	$= 27.14$	$= 29.42$	$= 31.83$
\times Volume (units)	95,000	100,000	150,000	150,000
= Nominal sales (\$)	2,474,750	2,714,000	4,413,000	4,774,500

2	<i>Variable cost</i>	1	2	3	4
	Unit cost (current terms) (\$)	11	12	12	13
	Inflation factor	$\times (1.05)$	$\times (1.05)^2$	$\times (1.05)^3$	$\times (1.05)^4$
	Inflated price	= 11.55	= 13.23	= 13.89	= 15.80
	\times Volume (units)	95,000	100,000	150,000	150,000
	= Nominal variable cost (\$)	1,097,250	1,323,000	2,083,500	2,370,000
3	<i>Fixed cost</i>	1	2	3	4
	Fixed cost (current terms) (\$)	150,000	150,000	150,000	150,000
	\times Inflation factor	$\times (1.03)$	$\times (1.03)^2$	$\times (1.03)^3$	$\times (1.03)^4$
	= Nominal fixed cost (\$)	154,500	159,135	163,909	168,826
4					
	<i>Tax allowable depreciation</i>		<i>Tax benefits</i>		<i>Year</i>
		\$		\$	
1	$1,800,000 \times 0.25 =$	450,000	$450,000 \times 0.22 =$	99,000	2
2	$450,000 \times 0.75 =$	337,500	$337,500 \times 0.22 =$	74,250	3
3	$337,500 \times 0.75 =$	253,125	$253,125 \times 0.22 =$	55,688	4
4	By difference	759,375	$759,375 \times 0.22 =$	167,063	5
		<u>1,800,000</u>		<u>396,001</u>	

- (b) You could have chosen any TWO of the following revisions.

Inflation

Real cash flows (cash flows in current prices) should be discounted at a real discount rate and nominal cash flows should be discounted at a nominal discount rate. The junior has correctly applied one year of inflation in year 1, but incorrectly applied one year of inflation in each of years 2 to 4. The inflation in year 2 should be $\times (1+h)^2$ and in year 3 should be $\times (1+h)^3$ and so on.

Interest payments

Interest repayments on the loan should not be included as these are dealt with via the cost of capital.

Tax allowable depreciation

Tax allowable depreciation is calculated on a reducing balance basis and not a straight line basis as the junior employee has done. There is also a balancing allowance in the final year.

The dates should correspond with the tax payments, so should be received a year in arrears.

Tax timing

The tax liability due in Year 5 was omitted. This is a cash flow which is relevant to the proposal and should therefore be included.

- (c) **NOTE: Only two methods are required to be discussed.**

Risk and uncertainty

A distinction should be made between the terms risk and uncertainty. Risk can be applied to a situation where there are several possible outcomes and, on the basis of past relevant experience, probabilities can be assigned to the various outcomes that could prevail. Uncertainty can be applied to a situation where there are several possible outcomes but there is little past relevant experience to enable the probability of the possible outcomes to be predicted.

There are a wide range of techniques for incorporating risk into project appraisal.

Sensitivity analysis

The basic approach of sensitivity analysis is to calculate the project's NPV under alternative assumptions to determine how sensitive it is to changing conditions. One variable is considered at a time. An indication is thus provided of those variables to which the NPV is most sensitive (critical variables) and the extent to

which those variables may change before the investment results in a negative NPV. Sensitivity analysis therefore provides an indication of why a project might fail.

Management should review critical variables to assess whether or not there is a strong possibility of events occurring which will lead to a negative NPV. As sensitivity analysis does not incorporate probabilities it should not be described as a way of incorporating risk into investment appraisal, although it often is.

Probability analysis

Probability analysis involves assigning probabilities to either the outcome of an investment project or to different values of variables in a project. The range of NPVs and their associated joint probabilities can be used to calculate an expected net present value which would arise if the project was repeated a number of times. This analysis can also show worst and best case scenario results and their associated probabilities. It can also show the most and least likely outcomes. This would allow managers to consider the risk profile of the project before making a decision.

Risk-adjusted discount rate

In investment appraisal, a risk-adjusted discount rate can be used for particular types or risk classes of investment projects to reflect their relative risks. For example, a high discount rate can be used so that a cash flow which occurs quite some time in the future will have less effect on the decision. Alternatively, with the launch of a new product, a higher initial risk premium may be used with a decrease in the discount rate as the product becomes established.

Adjusted payback

One way of dealing with risk is to shorten the payback period required. A maximum payback period can be set to reflect the fact that risk increases the longer the time period under consideration and a shorter payback period will focus on cash flows that are more certain because they are nearer in time to the present day.

153 Hraxin Co

Text references. Net present value is covered in Chapters 8 and 9. Risk and sensitivity analysis are covered in Chapter 10.

Top tips. As usual, you need to lay out a proforma for the ENPV calculation in part (a) and show your workings underneath. The main tasks are to deal with the expected selling price, the inflation and the tax allowable depreciation. Remember that nominal values include inflation already so don't need to be inflated. In part (c) you must explain that sensitivity analysis considers the relative change required in a variable to make the NPV zero.

Easy marks. Part (a) is full of easy calculation marks!

ACCA examination team's comments. The examination team stated that most answers to (a) gained good marks. Although the question stated that tax liabilities were paid in the year they arose, some answers incorrectly deferred the tax liabilities by one year. Many answers stated that the NPV was positive and therefore the project was financially acceptable. This ignores the fact that the ENPV is an average NPV which is not expected to occur in practice. For part (c) the examination team stated that many answers were not able to gain high marks. Many answers attempted to calculate sensitivities but the question asked for a discussion.

Marking scheme

		Marks
(a)	Mean selling price per unit	0.5
	Inflated selling price per unit	1
	Inflated revenue	1
	Inflated overhead	1
	Tax liabilities	1
	Timing of tax liabilities	1
	Tax-allowable depreciation benefits	1

	Scrap value	0.5	
	Present values of future cash flows	1	
	Comment on financial acceptability	1	
			9
(b)	Discussion of risk and uncertainty distinction	3	
	Value of considering risk and uncertainty	2	
			5
(c)	Explanation of sensitivity analysis	1-3	
	Explanation of risk in investment appraisal	1-2	
	Discussion of sensitivity analysis and risk	1-3	
		Maximum	6
			20

(a) Calculation of expected net present value Year

Year	1 \$000	2 \$000	3 \$000	4 \$000
Revenue	4,524	7,843	13,048	10,179
Variable cost	(2,385)	(4,200)	(7,080)	(5,730)
Contribution	2,139	3,643	5,968	4,449
Overhead	(440)	(484)	(532)	(586)
Cash flow before tax	1,699	3,159	5,436	3,863
Tax	(510)	(948)	(1,631)	(1,159)
Depreciation benefits	338	338	338	338
Cash flow after tax	1,527	2,549	4,143	3,042
Scrap value				500
Project cash flow	1,527	2,549	4,143	3,542
Discount at 11%	0.901	0.812	0.731	0.659
Present values	1,376	2,070	3,029	2,334
				\$000
PV of future cash flows			8,809	
Initial investment			(5,000)	
Expected net present value (ENPV)			3,809	

The investment project has a positive ENPV of \$3,809,000. This is a mean or average NPV which will result from the project being repeated many times. However, as the project is not being repeated, the NPVs associated with each future economic state must be calculated as it is one of these NPVs which is expected to occur. The decision by management on the financial acceptability of the project will be based on these NPVs and the risk associated with each one.

Workings

Mean or average selling price = $(25 \times 0.35) + (30 \times 0.5) + (35 \times 0.15) = \29 per unit

Year	1	2	3	4
Inflated selling price (\$ per unit)	30.16	31.37	32.62	33.93
Sales volume (units/year)	150,000	250,000	400,000	300,000
Sales revenue (\$000/year)	4,524	7,843	13,048	10,179

Year	1	2	3	4
Inflated overhead (\$000/year)	440	484	532	586

Total tax-allowable depreciation = $5,000,000 - 500,000 = \$4,500,000$

Annual tax-allowable depreciation = $\$4,500,000 / 4 = \$1,125,000$ per year

Annual cash flow from tax-allowable depreciation = $\$1,125,000 \times 0.3 = \$337,500$ per year

- (b) The terms **risk** and **uncertainty** are often used interchangeably but a distinction should be made between them. With risk, there are **several possible outcomes**, which upon the basis of past relevant experience, can be **quantified**. In areas of uncertainty, again there are several possible outcomes, but with little past experience, it will be **difficult to quantify** its likely effects.

A risky situation is one where we can say that there is a 70% probability that returns from a project will be in excess of \$100,000 but a 30% probability that returns will be less than \$100,000. If, however, no information can be provided on the returns from the project, we are faced with an uncertain situation. Managers need to exercise caution when assessing future cash flows to ensure that they make appropriate decisions. If a project is too risky, it might need to be rejected, depending upon the prevailing **attitude to risk**.

In general, risky projects are those whose future cash flows, and hence the project returns, are likely to be **variable**. The greater the variability is, the greater the risk. The problem of risk is more acute with capital investment decisions than other decisions because estimates of cash flows might be for several years ahead, such as for major construction projects. Actual costs and revenues may vary well above or below budget as the work progresses.

- (c) Sensitivity analysis assesses the extent to which the net present value (NPV) of an investment project responds to changes in project variables. Two methods are commonly used: one method determines the percentage change in a project variable which results in a negative NPV, while the other method determines the percentage change in NPV which result from a fixed percentage change (for example, 5%) in each project variable in turn. Whichever method is used, the key or critical project variables are identified as those to which the NPV is most sensitive, for example. Those where the smallest percentage change result in a negative NPV. Sensitivity analysis is therefore concerned with calculating relative changes in project variables.

When discussing risk in the context of investment appraisal, it is important to note that, unlike uncertainty, risk can be quantified and measured. The probabilities of the occurrence of particular future outcomes can be assessed, for example, and used to evaluate the volatility of future cash flows, for example, by calculating their standard deviation. The probabilities of the future economic states in the assessment of the investment project of Hraxin Co are an example of probability analysis and these probabilities can lead to an assessment of project risk.

Sensitivity analysis is usually studied in investment appraisal in relation to understanding how risk can be incorporated in the investment appraisal process. While sensitivity analysis can indicate the critical variables of an investment project, however, sensitivity analysis does not give any indication of the probability of a change in any critical variable. Selling price may be a critical variable, for example, but sensitivity analysis is not able to say whether a change in selling price is likely to occur. In the appraisal of the investment project of Hraxin Co, the probabilities of different selling prices arising the related economic states have come from probability analysis, not from sensitivity analysis.

Sensitivity analysis will not therefore directly assist Hraxin Co in assessing the risk of the investment project. However, it does provide useful information which helps management to gain a deeper understanding project and which focuses management attention on aspects of the investment project where problems may arise.

MCQ bank – Sources of finance

- 154 D Short-term loans are subject to a loan agreement giving the bank security and a definite repayment schedule. This lowers the risk from their perspective, hence the interest rate charged is lower.

Syllabus area E1a

- 155 A Ordinary shares are most risky from the debt holder's perspective – the company can decide whether and how much of a dividend to pay.

Preference shares are next most risky – dividends are only payable if profit is available to pay dividends from.

Trade payables are next because they have to be paid before shareholders but are typically unsecured.

Finally, banks with fixed and floating charges face least risk.

Syllabus area E1b

156 D \$1.92

$$\begin{array}{rcl} \$2 & \times & 4 \\ \$1.60 & \times & 1 \\ \hline & 5 & \\ & & \$9.60 \end{array}$$

Theoretical ex rights price = $\$9.60 / 5 = \1.92

Syllabus area E1c

157 D Zero coupon bonds are issued at a discount to their redemption value and do not pay any interest.

Syllabus area E1b

158 A B is mudaraba. C is murabaha. D is ijara. A key principle is that charging interest, and making money from money lending alone is forbidden under Sharia'a law, so providers of finance are more directly involved with the risks and rewards of the businesses they finance.

Syllabus area E1d

MCQ bank – Dividend policy

159 A Modigliani and Miller (M&M) assume perfect capital markets so there is no information content in dividend policy. They assume no taxes or tax preferences so investors will be indifferent between income and capital gains. They also assume no transaction costs so investors can switch between income and capital gains without cost – eg if a company withholds a dividend when the investor would prefer cash, the investor can sell some of their shares (known as 'manufacturing a dividend'). M&M's theory is not contingent upon the existence or otherwise of inflation.

Syllabus area E1e

160 B The signalling effect alludes to the information content in the dividend announcement. In semi-strong form capital markets with imperfect information, investors will 'interpret' dividend announcements and by comparing them to expectations they will adjust their perceptions of past, current and future performance.

Syllabus area E1e

161 B M&M stated that income preference is irrelevant in deciding dividend policy, because if you 'assume away' taxation and transaction costs, it is costless for investors to switch from capital gain to dividends by selling some shares.

Syllabus area E1e

162 C To incentivise investors to choose the shares alternative for their dividend, companies can offer an 'enhanced scrip' ie offer more value in shares than the cash alternative.

Syllabus area E1e

163 A Company Sun Co = Constant growth. Company Moon Co = Constant pay-out. Company Nite Co = Residual/random

Company Sun Co dividends are growing at 10% per annum even though earnings are not.

Company Moon Co is paying 50% of its earnings out as a dividend consistently.

Company Nite Co's dividends are not obviously connected with reported earnings, so their policy is either residual (ie only paying dividends once investment plans are budgeted for) or random.

Syllabus area E1e

MCQ bank – Gearing and capital structure

164 C Operational gearing = Contribution / Profit before interest and tax.

$$\text{Contribution} = \text{Revenue} - \text{variable cost} = 10,123 - (70\% \times 7,222) - (10\% \times 999) = 4,967.70$$

$$\text{Operational gearing} = 4,967.70 / 1,902 = 2.61$$

Syllabus area E3d

165 D 53%

$$\text{Market value of equity} = \$5.50 \times \$100m = \$550m$$

$$\text{Market value of long term debt} = \$500m \times (125/100) = \$625m$$

$$\text{Therefore financial gearing} = 625 / (625 + 550) = 53\%$$

Syllabus area E3d

166 D Statements A and B are incorrect. They may be true but are not definitions of financial risk.

Statement C is incorrect. Overall, dividends may be lower as gearing increases compared to an equivalent ungeared firm, but there are fewer shareholders/shares in the geared equivalent, meaning dividend per share could be higher, lower or the same as the ungeared firm.

Statement D is correct. As interest payments do not vary with profits, interest is effectively a fixed cost to the business. High financial gearing means that a company is more vulnerable to poor trading conditions. For example, reductions in revenue result in relatively large reductions in profits and dividends, as there are less variable costs to cushion the reduction in revenue. The opposite is the case with increases in revenue, thus shareholders in a geared firm face higher variability in their returns.

Syllabus area E3a

167 B Interest cover will rise. Gearing will fall. All else being equal less interest to pay will mean a higher interest cover.

$$(\text{Interest cover} = \text{Profit Before Interest and Tax} / \text{Interest})$$

Reducing debt will reduce the gearing ratio.

Syllabus area E3d

168 B P/E ratio will increase. Dividend yield will decrease.

In relation to expectations, results being better than expected would boost share price. This would increase the price / earnings ratio.

By the same logic, dividend yield would reduce. Dividend yield is calculated as dividend / share price; hence a higher share price would reduce the ratio.

Syllabus area E3d

169 C Both statements are true.

SMEs are private companies with a limited number of shareholders. Unless the shareholders are wealthy, there is a limit to the amount of extra capital they may be able to invest.

Venture capital is a potential source of financing. However, it is not necessarily easy for SMEs to attract venture capital. They must be able to demonstrate strong opportunities for profit growth.

Syllabus area E5

170 B Statement 1 and Statement 2 are true

Statement 1. The main handicap that SMEs face in accessing funds is the problem of uncertainty and risk for lenders. This is because they have neither the business history nor the long trade record that larger organisations possess.

Statement 2. Larger enterprises are subject by law to more public scrutiny and their financial statements have to contain more detail and be audited, giving greater clarity to investors than less detailed financial statements of smaller companies.

Statement 3. Once small firms have become established they do not necessarily need to seek a market listing to obtain equity finance. Shares *can* be placed privately.

Syllabus area E5

- 171 C Both statements are true

Statement 1 is true. For long-term loans, security can be provided in the form of property (eg mortgages) but SMEs may not have suitable security for a medium-term loan due to mismatching of the maturity of assets and liabilities. This problem is known as the maturity gap.

Statement 2 is true. A funding gap is a shortfall in capital needed to fund the ongoing operations and this is a common problem for SMEs.

Syllabus area E5

- 172 D This is known as business angel financing. Business angels are prepared to take high risks in the hope of high returns.

Syllabus area E5

- 173 B Statement 1 is false. SCF allows a buyer to extend the time in which it settles its accounts payable. For the supplier, it is a sale of their receivables.

Statement 2 is true. The buyer is usually a large company with a good credit rating. This means that low interest rates are charged to the supplier by the intermediary fund provider, for providing the supplier with finance, ie, in the form of purchasing its invoices.

Syllabus area E5

CBE style OTQ bank – The cost of capital

- 174 \$1.73

20X9 to 20Y3 covers 4 years of growth,

$$\text{so the average annual growth rate} = \sqrt[4]{(423 / 220)} - 1 = 0.178 = 17.8\%$$

$$K_e = \frac{d_0(1+g)}{P_0} + g$$

$$K_e - g = \frac{d_0(1+g)}{P_0}$$

$$P_0 = \frac{d_0(1+g)}{K_e - g}$$

$$= (423,000 \times 1.178) / (0.25 - 0.178) = \$6,920,750 \text{ for 4 million shares} = \$1.73 \text{ per share}$$

Syllabus area F2c

- 175 31% Using Gordon's growth approximation, $g=br$

g = proportion of profits retained \times rate of return on investment.

$$\text{Proportion of earnings retained} = (\$1.50 - \$0.5) / \$1.50 = 66.7\%$$

$$\text{Rate of return on investment} = \text{EPS} / \text{net assets per share} = \$1.5 / \$6 = 0.25 \text{ so } 25\%$$

$$g = 66.7\% \times 25\% = 16.7\%$$

$$K_e = \frac{d_0(1+g)}{P_0} + g$$

$$= \frac{(\$0.50 \times 1.167)}{(\$4.50 - \$0.50)} + 0.167$$

Note: Share price given is cum div

$$= 31\%$$

Syllabus area E2a

- 176 The residual risk associated with investing in a well-diversified portfolio
 'The chance that automated processes may fail' is incorrect. Systematic risk refers to return volatility, not automated processes.
 'The risk associated with investing in equity' is incorrect. This describes **total** risk, which has both systematic and unsystematic elements
 'The diversifiable risk associated with investing in equity' is incorrect. Systematic risk cannot be diversified away
 'The residual risk associated with investing in a well-diversified portfolio' is correct. It is the risk generated by undiversifiable systemic economic risk factors.

Syllabus area E2a

- 177 13.4%
 The equity beta relates to the cost of equity, hence gearing and the debt beta are not relevant.
 $E(r_i) = R_f + \beta (E(R_m) - R_f) = 3\% + (1.3 \times 8\%) = 13.4\%$
 Syllabus area E2a
- 178 Increases to 9.4%
 $K_d = i(1-T) / P_0$
 The loan note pays interest of \$100 nominal $\times 10\% = 10\%$. Ex-interest market price is \$95 – \$10 = \$85.
 Before the tax cut $K_d = 10(1 - 0.3) / 85 = 8.2\%$
 After the tax cut $K_d = 10(1 - 0.2) / 85 = 9.4\%$
 Decreasing tax reduces tax saved therefore increases the cost of debt.

Syllabus area E2b

- 179 11.5%
 Conversion value: Future share price = current share price including growth = $\$2.50 \times (1.1)^5 = \4.03 .
 So conversion value = $20 \times \$4.03 = \80.60 . The cash alternative = $100 \times 1.1 = \$110$ therefore investors would not convert and redemption value = \$110.

$K_d = IRR$ of the after tax cash flows as follows:

Time	\$	DF 10%	Present value	DF 15%	Present value
			10%		15%
0	(90)	1	(90)	1	(90)
1-5	$10(1 - 0.3) = 7$	3.791	26.54	3.352	23.46
5	110	0.621	68.31	0.497	54.67
			<u>4.85</u>		<u>(11.87)</u>

$$\begin{aligned} IRR &= a + \frac{NPV_a}{NPV_a - NPV_b} (b - a) \\ &= 10\% + \frac{4.85}{(4.85 + 11.87)} (15\% - 10\%) \\ &= 11.5\% \end{aligned}$$

Syllabus area E2b

- 180 11.7%
 $K_d = i(1 - T) / P_0 = 13(1 - 0.3) / 90 = 10.11\%$
 $V_d = \$7m \times (90/100) = \$6.3m$
 $K_e = 12\%$ (given)
 $V_e = \$3 \times 10m \text{ shares} = \$30m$ Note: reserves are included as part of share price

$$V_e + V_d = \$6.3m + \$30m = \$36.3m$$

$$WACC = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d$$

$$= [30/36.3]12\% + [6.3/36.3]10.11\% = 11.7\%$$

Syllabus area E2c

181

1, 2 and 3

Changes in capital structure will affect the WACC so need to stay constant. The current WACC reflects a risk premium relating to current operations, hence the new project should be of a similar risk profile to current operations. The project should be small in size; large projects are both riskier (commanding a risk premium) and likely to affect the value of equity, in turn affecting the WACC.

Syllabus area E3e

182

Companies are well diversified

'Efficient capital markets' is a necessary assumption. Share price can be used to accurately calculate beta factors.

'Well diversified investors' is a necessary assumption. Shareholders only require compensation for systematic risk ie the risk that cannot be diversified away.

'Future periods are consistent with the present' is a necessary assumption. Beta factors are estimated using historical data, but the cost of equity is to be used to appraise a future project, hence we need to assume the historical beta will continue.

'Companies are well diversified' is not a necessary assumption. So long as investors are well diversified, any individual company need not be. Investors are assumed to invest in a diversified portfolio of projects. It doesn't matter how few or how many reside in any one company.

Syllabus area E2a

183

15.4%

$$\text{Ex-div share price} = \$0.30 - (8\% \times \$0.50) = \$0.26$$

$$K_p = \$0.50 \times 8\% / \$0.26 = 15.4\%$$

Note: dividends are not tax deductible hence no adjustment for corporation tax is required.

Syllabus area E2b

184

It should take on equity finance, as their gearing is probably beyond optimal.

'It should take on debt finance, as to do so will save tax' refers to Modigliani-Miller (MM) with tax: raising debt finance will increase interest payments and hence save tax, adding to the total returns a business generates.

'It should take on equity finance, as their gearing is probably beyond optimal' is correct: the traditional view implies that once gearing has gone beyond optimal the weighted average cost of capital (WACC) will increase if more debt is taken on. As A Co is significantly more highly geared than the industry standard, it is probably reasonable to assume its gearing is beyond optimal.

'It doesn't matter, as it won't affect the returns the projects generate' refers to MM with no tax: paying interest or paying dividends does not affect the overall returns generated by a non-tax paying business.

'More information is needed before a decision can be made' is incorrect: see 'B' above.

Syllabus area E4a&b

185

Interest payments are tax deductible

'Debt is cheaper than equity': Although true, higher gearing increases the cost of equity (financial risk) therefore this doesn't in itself explain a reducing WACC.

'Interest payments are tax deductible' is correct: The only difference between MM (no tax) and MM (with tax) is the tax deductibility of interest payments. MM demonstrated that when a business does not pay tax, returns are not affected by capital structure. However, as interest is tax deductible (and dividends are not) paying relatively more interest will reduce tax payable and increase total returns to investors.

'Reduced levels of expensive equity capital will reduce the WACC' is similar to Statement A.

'Financial risk is not pronounced at moderate borrowing levels' refers to the traditional view. MM assume financial risk is consistently proportionate to gearing across all levels.

Syllabus area E4b

186 Modigliani-Miller (with tax) and the traditional view

Option 1. MM (with tax) assumes increased gearing will always reduce the weighted average cost of capital (WACC).

Option 2. At low levels of gearing, the traditional view states financial risk is low, hence more inexpensive debt will reduce the WACC.

Option 3 is not relevant: pecking order theory relates to a logical order for choosing finance based on convenience and issue cost.

Option 4. MM (no tax) concludes that the gearing level will not affect the WACC.

Syllabus area E4a&b

187 Traditional view MM (no tax)

The traditional view has a 'u' shaped weighted average cost of capital (WACC) curve hence there is an optimal point where WACC is minimised.

MM (with tax) assumes 100% gearing is optimal, so there is no balance with equity.

MM (no tax) assumes the WACC is unaffected by the level of gearing. As the WACC is the discount rate for the projects of the business it follows that the value of the business is unaffected by the gearing decision.

Syllabus area E4a&b

188 Internal funds, debt, new equity

Pecking order theory suggests that as internal funds are free to raise and immediate they should be used first. After that, debt is relatively quick and inexpensive to raise, interest is tax deductible and the cost of debt is lower than the cost of equity. New equity is relatively expensive hence is considered last.

Syllabus area E4d

189 0.89.

B Co is being used as a proxy company and has a different level of gearing to TR Co.

Ungear B Co's equity beta:

$$\begin{aligned}\beta_a &= \beta_e \times \frac{V_e}{(V_e + V_d(1-T))} \\ &= 1.05 \times \frac{4}{(4+1(1-0.3))} \\ &= 0.89\end{aligned}$$

Syllabus area E3e

190 8.4%

Regear β_a using TR assumption of a gearing level of 1:3 debt : equity

$$\beta_e = \beta_a \times \frac{V_e + V_d(1-T)}{V_e}$$

$$\beta_e = 0.89 \times \frac{3 + 1(1 - 0.3)}{3}$$

$$\beta_e = 1.10$$

Put into CAPM:

$$K_e = R_f + \beta(E(r_m) - R_f) \quad R_f = 4\%, E(R_m) - R_f = 4\% \text{ (market premium)}$$

$$\begin{aligned} K_e &= 4 + 1.10(4) \\ &= \mathbf{8.4\%} \end{aligned}$$

Syllabus area E3e

- 191 An equity beta also includes an element of financial risk

An equity beta reflects both business risk and financial risk. An asset beta only reflects the former.

Syllabus area E3e

- 192 If the project is different from current operations

A project-specific cost of capital is relevant to appraise a project with a different risk profile from current operations. In these circumstances the current weighted average cost of capital is not relevant – so proxy information is used to calculate a project specific cost of capital for that particular appraisal.

Syllabus area E3e

- 193 As deductions have reduced tax payable to zero, further deductions won't save tax

Tax exhaustion typically refers to a situation where although interest payments are tax deductible, tax expenses have already been eliminated completely and so any further interest payments cannot save more tax. The cost of additional debt is the gross cost (more expensive).

Syllabus area E3c

IML Co

- 194 12%

The required rate of return on equity can be found using the capital asset pricing model:

$$E(r_i) = R_f + \beta_i (E(r_m) - R_f)$$

AZT Co

$$\begin{aligned} E(r_i) &= 5\% + 0.7(15\% - 5\%) \\ &= 12\% \end{aligned}$$

- 195 32%

$$\begin{aligned} \text{Total shareholder return} &= \frac{P_1 - P_0 + D}{P_0} \\ &= \frac{(315 - 250) + 15}{250} \\ &= 0.32 = 32\% \end{aligned}$$

196 1.2

The equity beta for IML can be found using the same expression:

$$17\% = 5\% + \beta(15\% - 5\%)$$

$$\beta = \frac{(17\% - 5\%)}{(15\% - 5\%)}$$

The equity beta factor = 1.2

197 Statements 1 and 4 are true.

The equity beta factor is a measure of the volatility of the return on a share relative to the stock market. If for example a share price moved at three times the market rate, its equity beta factor would be 3.0.

The beta factor indicates the level of systematic risk, which is the risk of making an investment that cannot be diversified away.

It is used in the capital asset pricing model to determine the level of return required by investors; the higher the level of systematic risk, the *higher* the required level of return.

It is true that companies want a return on a project to exceed the risk-free rate.

198 Both statements are true.

Under the CAPM, the return required from a security is related to its systematic risk rather than its total risk. Only the risks that cannot be eliminated by diversification are relevant. The assumption is that investors will hold a fully diversified portfolio and therefore deal with the unsystematic risk themselves.

The CAPM is unable to forecast accurately returns for companies with low price/earnings ratios.

199 Bar Co

Text references. Rights issues are covered in Chapter 12. Gearing is covered in Chapter 14.

Top tips. For part (b) it is necessary to both calculate and discuss the effect of using the issue proceeds to buy back debt. Ensure that you also address the unlikely assumption that the price/earnings ratio remains unchanged. In part (c) if you follow the direction given in the requirement this should lead you to a good answer. Part (d) needs a discussion of the two types of risk – don't forget to define them.

Easy marks. The calculation of the theoretical ex-rights price is straightforward.

Marking scheme

	Marks
(a) Rights issue price	1
Theoretical ex-rights price	2
	<u>3</u>
(b) Nominal value of bonds redeemed	1
Interest saved on redeemed bonds	1
Earnings after redemption	1
Current price/earnings ratio	1
Revised share price	1
Comment on acceptability to shareholders	1-2
Comment on constant price/earnings ratio	1-2
	<u>7</u>
	Maximum

(c)	Current interest coverage	0.5
	Revised interest coverage	1
	Current debt/equity ratio	0.5
	Revised debt/equity ratio	1
	Comment on financial risk	1
		4
(d)	Explanation of business risk	1
	Explanation of financial risk	1
	Up to 2 marks for each danger of high gearing	4
		6
		<u>20</u>

- (a) The rights issue price is at a 20% discount
 $\$7.5 \times 0.8 = \6 per share
 Number of shares to be issued = $\$90m / \$6 = 15$ million shares
 Current number of shares in issue = 60 million
 Therefore the rights issue will be a 1 for 4 issue

Theoretical ex-rights price

	\$
4 shares @ \$7.50	30.00
1 share @ \$6.00	6.00
	<u>36.00</u>

Theoretical ex-rights price (TERP) = $36/5 = \$7.20$

- (b) The proposal to buy back the bonds will only be acceptable to shareholders if it increases shareholder wealth.
 The bonds would be bought back at market price (\$112.50), which is higher than the nominal value (\$100). The nominal value of bonds that will be bought back is $\$90$ million / $\$112.50 \times \$100 = \$80$ million.
 Interest saved on these bonds = $\$80m \times 0.08 = \$6.4m$ per year
 New annual interest charge = $\$10m - \$6.4m = \$3.6m$
 Revised profit before tax = $\$49m - \$3.6m = \$45.4m$
 Revised profit after tax (earnings) = $\$45.4m \times 0.7 = \$31.78m$
 Revised earnings per share = $\$31.78m / 75m = 42.37$ cents per share
 Current earnings per share = $\$27m / 60m = 45$ cents per share
 Current price/earnings ratio = $750 / 45 = 16.7$ times
 Assuming the price/earnings ratio remains constant, the revised share price will be
 Share price = $16.7 \times 42.37 = 708$ cents or $\$7.08$ per share.
 This revised share price is less than the theoretical ex-rights price and therefore using the issue proceeds to buy back debt will not be acceptable to the shareholders as their wealth will have decreased.
 This conclusion has been reached based on the assumption that the price/earnings ratio remains unchanged. However, the share price will be determined by the stock market and this will determine the price/earnings ratio, rather than the price/earnings ratio determining the share price. Buying back debt would decrease the financial risk of Bar Co and this could cause the cost of equity to fall since shareholders will be taking on less risk. This means the share price is likely to rise and therefore the price/earnings ratio will also increase. If the share price were to increase above the theoretical ex-rights price, which would mean the price/earnings ratio would be at least 17 times, the shareholders would find the debt buy back to be an acceptable use of funds as they would experience a capital gain.

- (c) Current interest coverage ratio = $49m / 10m = 4.9$ times
 Revised interest coverage ratio = $49m / 3.6m = 13.6$ times
 Current debt/equity ratio = $125m/140m = 89.3\%$
 Revised book value of debt = $125m - 80m = \$45m$
 Revised book value of equity = $140m + 90m - 10m = \$220m$
 \$10 million has been deducted because \$90 million was spent to redeem bonds with a nominal value of \$80 million.
 Revised debt/equity ratio = $45m/220m = 20.5\%$

Note: Full credit would also be given for a calculation that omitted the \$10 million loss. The revised debt/equity ratio would be $45m/230m = 19.6\%$.

Redeeming the bonds with a book value of \$80 million would significantly reduce the financial risk of Bar Co. This is shown by the reduction in gearing from 89.3% to 20.5% and the increase in the interest coverage from 4.9 times to 13.6 times.

- (d) (i) **Business risk**, the inherent risk of doing business for a company, refers to the risk of making only low profits, or even losses, due to the nature of the business that the company is involved in. One way of measuring business risk is by calculating a company's operating gearing or 'operational gearing'.

$$\text{Operating gearing} = \frac{\text{Contribution}}{\text{Profit before interest and tax (PBIT)}}$$

The significance of operating gearing is as follows.

- (1) **If contribution is high but PBIT is low**, fixed costs will be high, and only just covered by contribution. Business risk, as measured by operating gearing, will be high.
 - (2) **If contribution is not much bigger than PBIT**, fixed costs will be low, and fairly easily covered. Business risk, as measured by operating gearing, will be low.
- (ii) A high level of debt creates financial risk. This is the risk of a company not being able to meet other obligations as a result of the need to make interest payments. The proportion of debt finance carried by a company is therefore as significant as the level business risk. Financial risk can be seen from different points of view.
- (1) **The company as a whole**. If a company builds up debts that it cannot pay when they fall due, it will be forced into liquidation.
 - (2) **Payables**. If a company cannot pay its debts, the company will go into liquidation owing payables money that they are unlikely to recover in full.
 - (3) **Ordinary shareholders**. A company will not make any distributable profits unless it is able to earn enough profit before interest and tax to pay all its interest charges, and then tax. The lower the profits or the higher the interest-bearing debts, the less there will be, if there is anything at all, for shareholders.

200 YGV Co

Text references. Cost of debt is covered in Chapter 15, sources of finance are explained in Chapter 12 and interest coverage and gearing in Chapter 14.

Top tips. In part (a) the choice of discount factors is not crucial and other rates could be used to get a slightly different cost of debt, and therefore, WACC.

Easy marks. The cost of debt calculation in part (a) is quite straightforward as are the interest coverage and gearing calculations in part (b).

ACCA examination team's comments. In part (a) some candidates wrongly used the redemption value of \$110 as the issue price, or wrongly used a redemption value of \$100, when the question said that redemption was at a 10% premium to nominal value.

For part (b) although the question said 'calculate', many answers chose to discuss their findings, sometimes at length. This discussion was not asked for in this part of the question and students must learn to follow the question requirement.

Part (c) required students to evaluate the proposal to use the bond issue to finance the reduction in the overdraft, and to discuss alternative sources of finance, given the company's current position. Many answers were very brief given the marks on offer.

Marking scheme

	Marks
(a) Calculation of after-tax interest payment	1
Calculation of after-tax cost of debt	<u>3</u>
	4
(b) Current interest coverage	1
Revised interest coverage	1
Current gearing	1
Revised gearing	<u>1</u>
	4
(c) Comment on interest coverage ratio	1-2
Comment on gearing	1-2
Comment on need for security	2-3
Comment on advisability of bond issue	1-2
Discussion of alternative sources of finance	4-5
Other relevant discussion	<u>1-2</u>
	Maximum
	12
	20

- (a) The after tax interest charge per bond is $\$9 \times 0.7 = \6.30

Two discounts should be chosen, 6% and 8%

<i>Year</i>	<i>0</i>	<i>1-10</i>	<i>10</i>
	\$	\$	\$
Cash flow	(100)	6.30	110
Discount factor @ 8%	1.000	6.710	0.463
Present value	(100.00)	42.27	50.93

Net present value = (6.80)

<i>Year</i>	<i>0</i>	<i>1-10</i>	<i>10</i>
	\$	\$	\$
Cash flow	(100)	6.30	110
Discount factor @ 6%	1.000	7.360	0.558
Present value	(100.00)	(46.37)	61.38

Net present value = 7.75

$$\text{Cost of debt} = 6 + [(8 - 6) \times 7.75 / (7.75 + 6.8)] = 6 + 1.1 = 7.1\%$$

- (b) (i) The current level of interest charge per year is $\$4.5\text{m} \times 5\% = \$225\,000$

Current interest coverage ratio = PBIT/Interest

1m / 0.225m = 4.4 times

Interest on bonds after issue = \$4m × 9% = \$360 000

Interest on overdraft = \$0.5m × 5% = \$25 000

Total interest per year = \$385 000

Interest coverage ratio with bond issue = $1m / 0.385m = 2.6$ times

- (ii) The current market capitalisation is $\$4.10 \times 10$ million shares = $\$41$ million
 Current gearing = zero (as no long-term debt)
 Gearing following bond issue (debt/equity) = $4m / 41m = 9.8\%$
 Alternatively if the overdraft is included in the calculations
 Current gearing = $4.5m / 41m = 11.0\%$
 Gearing following bond issue (debt/equity) = $4.5m / 41m = 11.0\%$

(c) **Interest coverage ratio**

The current interest coverage ratio is almost half of the sector average of 8. Although with the prior year profit before tax it was 22 times. Following the bond issue this would drop to 2.6 times which is a low level of cover compared to the sector average and may create operational issues for YGV.

Gearing

Whether the overdraft is included in the gearing calculation or not, the revised gearing level of either 9.8% or 11% is not significantly different from the sector average of 10%. As a result, there are no concerns about the level of gearing resulting from the bond issue.

Security

The reduction in profitability will increase the likelihood of the bond issue needing to be secured against the non-current assets of YGV. This may create issues as the tangible non-current assets of YGV have a net book value of \$3 million, which does not cover the value of the bond issue of \$4 million. It is unlikely that the intangible assets could be used as security, but their nature has not been disclosed.

Using the bond to reduce the overdraft

Considering the issues raised above, particularly the fall in the interest coverage and the lack of assets to use as security, the bond issue is not recommended as it is unlikely to succeed. As a result, alternative sources of finance should be considered in order to reduce the overdraft.

Alternative sources of finance

There is a lack of availability of additional overdraft finance, so this is not a viable option. The issue with the lack of interest coverage will also rule out any other form of debt finance.

Any provider of finance will first need to be reassured that the fall in profitability is due to short-term reasons and that YGV will continue to be a going concern in the long term.

The amount of finance required is the \$4 million required to reduce the overdraft, but this amount could be reduced through working capital management, particularly given the amount of working capital tied up in accounts receivable.

No information is given about dividends, but if these are paid they could be either reduced to increase the amount of retained earnings available.

Equity finance is the most likely source of finance to consider. YGV may consider a rights issue. The offer price will be lower than the market price and given the situation a fairly large discount may need to be applied. A discount of 25% would give a price for the rights issue of \$3.08. A 1 for 7 rights issue at this price would raise \$4.4 million which could reduce the overdraft to \$100,000 where the interest charge would only be \$5,000 per year.

A new issue of shares is a possibility as \$4 million is only 9% of the total shares in issue at that point (\$45 million). This means that dilution of existing holdings will not be a significant issue. New shareholders may not be attracted to invest if there are no dividends on offer though. A new issue of shares would also be more expensive for YGV.

Sale and leaseback is not likely to raise significant levels of finance, given the tangible non-current asset level of \$3 million, but could be used alongside another source of finance.

Convertible bonds could also be considered as an alternative.

201 NN Co

Text references. Cost of capital is covered in Chapter 15. Dividend policy is covered in Chapter 13

Top tips. For part (a) it is important to remember to use the after tax interest payment in the IRR style calculations. Although the discount rate used can vary it is sensible to start off with the cost of debt if the debt was irredeemable and add in the annualised capital profit made between now and redemption.

In part (b) don't get confused by the fact that there are three elements to the WACC. For part (c), don't confuse factors in setting dividend policy with M&M's dividend irrelevance theory.

Easy marks. There are some easy marks for textbook knowledge of dividend policy.

ACCA examination team's comments. Answers that did not gain full marks to part (a) contained errors such as using the wrong tax rate (it was 25%), addition or multiplication errors, using the before-tax interest payment, or putting incorrect values to variables in the linear interpolation calculation. For part (c), the requirement was worded carefully to encourage candidates to consider the dividend policy of a company faced by the demanding business environment of the real world. Little credit was therefore given to discussions of the dividend irrelevance theory of Miller and Modigliani, which is based on the assumption of a perfect capital market, since capital markets in the real world are no more than semi-strong form efficient.

Marking scheme

		Marks
(a)	Correct use of taxation	1
	Calculation of after-tax cost of debt	<u>3</u>
		4
(b)	Cost of preference shares	1
	Market value of equity	1
	Market value of preference shares	1
	Market value of debt	1
	Weighted average cost of capital	<u>2</u>
		6
(c)	Profitability	1-2
	Liquidity	1-2
	Legal and other restrictions	1-2
	The need for finance	1-2
	The level of financial risk	1-2
	The signalling effect of dividends	<u>1-2</u>
	Maximum	<u>10</u>
		<u>20</u>

- (a) The cost of redeemable debt is found by an IRR style calculation using linear interpolation.

The annual after tax interest payment is $7 \times (1 - 0.25) = \$5.25$

Year		Cash flow	Discount	PV	Discount	PV
			factor		4%	
		\$	5%	\$	4%	\$
0	Market value	(103.50)	1.000	(103.50)	1.000	(103.50)
1–6	Interest	5.25	5.076	26.65	5.242	27.52
6	Capital repayment	100.00	0.746	<u>74.46</u>	0.790	<u>79.90</u>
				<u>(2.25)</u>		<u>3.02</u>

The approximate cost of redeemable debt capital is, therefore:

$$(4 + \frac{3.02}{(3.02 - 2.25)} \times 1) = 4.6\%$$

Note: The cost of debt will vary depending on the discounts rates used. Other values calculated for the cost of debt would also be acceptable.

- (b) Preference dividend = $8\% \times 50$ cents = 4c per share

Cost of preference shares

$$k_p = \frac{d}{P_0} = \frac{4}{67} = 0.06 = 6\%$$

Number of ordinary shares = $\$50m / 0.5 = 100m$

Market value of equity $V_e = 100m \times 8.30 = \$830m$

Number of preference shares = $\$25m / 0.5 = 50m$ shares

Market value of preference shares $V_p = 50m \times 0.67 = \$33.5m$

Market value of long-term borrowings = $V_d = 20m \times 103.50 / 100 = \$20.7m$

Market value of company = $V_e + V_d + V_p = 830 + 33.5 + 20.7 = \$884.2m$

$$WACC = \left[\frac{V_e}{V_e + V_d + V_p} \right] k_e + \left[\frac{V_d}{V_e + V_d + V_p} \right] k_d (1 - T) + \left[\frac{V_p}{V_e + V_d + V_p} \right] k_p$$

$$WACC = (830/884.2) \times 0.12 + (33.5/884.2) \times 0.06 + (20.7/884.2) \times 4.6 = 11.6\%$$

- (c) Dividend policy will depend on a number of factors

Profits and retained earnings

The company needs to remain profitable. Dividends are paid out of profits, and an unprofitable company cannot go on paying dividends out of retained profits made in the past.

Law

Company legislation may make companies bound to pay dividends solely out of accumulated net realised profits, as in the UK.

Other restrictions

There may be other dividend restraints that might be imposed, such as covenants in loan agreements.

Liquidity

Since dividends are a cash payment, and a company must have enough cash to pay the dividends it declares without compromising its day-to-day operations.

If the company has to repay any debt in the near future, then this will also need to be considered.

Gearing

If gearing is high, then low dividend payments can help to keep retained earnings high which will then reduce the level of gearing as the level of reserves will be higher.

The signalling effect

Although the market would like to value shares on the basis of underlying cash flows on the company's projects, such information is not readily available to investors in a semi-strong form efficient market. But the directors do have this information so information asymmetry exists. The dividend declared can be interpreted as a signal from directors to shareholders about the strength of underlying project cash flows.

Investors usually expect a consistent dividend policy from the company, with stable dividends each year or, even better, steady dividend growth.

The need for finance

Another factor is the ease with which the company could raise extra finance from sources other than retained earnings. Small companies which find it hard to raise finance might have to rely more heavily on retained earnings than large companies.

Inflation

The effect of inflation means that there is a need to retain some additional profit within the business just to keep its operating capability unchanged.

202 AQR Co

Text references. Weighted average cost of capital is covered in Chapter 15. Cost of capital theories are explained in Chapter 16.

Top tips. Part (b) is a general discussion about capital structure theories.

Easy marks. Part (a) is a WACC calculation that you should be able to obtain good marks for.

ACCA examination team's comments. Some answers treated existing bonds as irredeemable and used the after-tax cost of debt provided as a before-tax interest rate. This implies learning a WACC calculation method without understanding the underlying principles, leading to an attempt to make the information provided fit the calculation method learned. There were also a significant number of errors in calculating the cost of equity using the dividend growth model. Alarm bells should sound if the calculated cost of equity is less than the cost of debt, or if the calculated cost of equity is quite large. A glance through past examination papers will show that a realistic approach has been used, with the cost of equity lying between say 5% and 15%.

Marking scheme

	Marks
(a) Calculation of historic dividend growth rate	1
Calculation of cost of equity using DGM	2
Calculation of market weights	1
Calculation of pre-issue WACC	2
Correct use of tax as regards new debt	1
Setting up linear interpolation calculation	1
Calculating after-tax cost of debt of new debt	1
Calculation of post issue WACC	2
Comment	1
	12
(b) Marginal and average cost of debt	1-2
Traditional view of capital structure	1-2
Miller and Modigliani 1 and 2	1-3
Market imperfections view	1-2
Pecking order theory	1-2
Other relevant discussion	1-2
Maximum	8
	<u>20</u>

(a) Cost of equity

$$\text{Geometric average growth rate} = \sqrt[4]{(21.8 / 19.38)} - 1 = 0.0298 = 2.98\% \text{ or } 3\%$$

$$\begin{aligned}\text{Putting this into the dividend growth model gives } k_e &= ((21.8 \times 1.03) / 250) + 0.03 \\ &= 0.09 + 0.03 = 0.12 = 12\%\end{aligned}$$

Market values of equity and debt

$$\text{Market value of equity} = V_e = 100m \times \$2.50 = \$250 \text{ million}$$

$$\text{Market value of bonds} = V_d = 60m \times (104/100) = \$62.4 \text{ million}$$

$$\text{Total market value} = \$250 \text{ million} + \$62.4 \text{ million} = \$312.4 \text{ million}$$

WACC calculation

The current after tax cost of debt is 7%

$$\begin{aligned}
 \text{WACC} &= ((k_e \times V_e) + (k_d(1 - T) \times V_d)) / (V_e + V_d) \\
 &= ((12 \times 250\text{m}) + (7 \times 62.4\text{m})) / 312.4\text{m} \\
 &= 11\%
 \end{aligned}$$

Cost of debt

After-tax interest payment = $100 \times 8\% \times (1 - 30\%) = 5.6\%$

Year		Cash flow	5%	6%	
			discount factors	PV	discount factors
		\$	\$	\$	\$
0	Market value	(100.00)	1.000	(100.00)	1.000
1-10	Interest	5.60	7.722	43.24	7.360
10	Capital repayment	105.00	0.614	64.47	0.558
				<u>7.71</u>	<u>(0.19)</u>

Calculate the cost of debt using an IRR calculation.

$$\text{IRR} = a\% + \left[\frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (b - a) \right] \%$$

$$\begin{aligned}
 &= 5\% + \frac{7.71}{7.71 + 0.19} (6\% - 5\%) \\
 &= 5.98\% \text{ or } 6\%
 \end{aligned}$$

Note: Other discount factors and therefore costs of debt are acceptable.

Revised WACC calculation

Market value of the new issue of bonds is \$40 million

New total market value = \$312.4m + \$40m = \$352.4m

Cost of debt of bonds is 6% (from above)

$$\begin{aligned}
 \text{WACC} &= ((12 \times 250\text{m}) + (7 \times 62.4\text{m}) + (6 \times 40\text{m})) / 352.4\text{m} \\
 &= 10.4\%
 \end{aligned}$$

The debt issue has reduced the WACC. This is because of the addition of relatively cheap debt. Gearing up in this manner would usually be assumed to increase financial risk. However, this hasn't been included in the above calculations.

- (b) There is a relationship between the weighted average cost of capital (WACC) and the value of a company as the value can be expressed as the present value of the future cash flows with the WACC as the discount rate.

Marginal and average cost of debt

If the marginal cost of capital for the issue of the new capital, in this case the bond issue, is less than the current WACC then it may be expected that the WACC will increase. However as new debt increases gearing it will also increase financial risk. This increased risk may lead to an increase in the cost of equity which could offset the effect of the cheaper debt.

Traditional view

Under the traditional view there is an optimal capital mix at which the average cost of capital, weighted according to the different forms of capital employed, is minimised. The traditional view is that the weighted average cost of capital, when plotted against the level of gearing, is saucer shaped. The optimum capital structure is where the weighted average cost of capital is lowest.

As the level of gearing increases, the cost of debt remains unchanged up to a certain level of gearing. Beyond this level, the cost of debt will increase. The cost of equity rises as the level of gearing increases and financial risk increases. There is a non-linear relationship between the cost of equity and gearing.

The weighted average cost of capital does not remain constant, but rather falls initially as the proportion of debt capital increases, and then begins to increase as the rising cost of equity (and possibly of debt) becomes more significant. The optimum level of gearing is where the company's weighted average cost of capital is minimised. Under this theory the finance director may be correct in his view that issuing debt will decrease WACC depending on the position of AQR relative to the optimum capital structure.

Modigliani and Miller

In their 1958 theory, Modigliani and Miller (MM) proposed that the total market value of a company, in the absence of tax, will be determined only by two factors: the total earnings of the company and the level of operating (business) risk attached to those earnings. The total market value would be computed by discounting the total earnings at a rate that is appropriate to the level of operating risk. This rate would represent the WACC of the company. Thus Modigliani and Miller concluded that the capital structure of a company would have no effect on its overall value or WACC.

In 1963 Modigliani and Miller modified their theory to admit that tax relief on interest payments does lower the weighted average cost of capital. The savings arising from tax relief on debt interest are the tax shield. They claimed that the weighted average cost of capital will continue to fall, up to gearing of 100%. Under this theory the finance director of AQR is correct in his belief that issuing bonds will decrease the WACC.

Market imperfections

MM's theory assumes perfect capital markets so a company would always be able to raise finance and avoid bankruptcy. In reality, however, at higher levels of gearing there is an increasing risk of the company being unable to meet its interest payments and being declared bankrupt. At these higher levels of gearing, the bankruptcy risk means that shareholders will require a higher rate of return as compensation.

As companies increase their gearing they may reach a point where there are not enough profits from which to obtain all available tax benefits. They will still be subject to increased bankruptcy and agency costs but will not be able to benefit from the increased tax shield.

Pecking order theory

Pecking order theory has been developed as an alternative to traditional theory. It states that firms will prefer retained earnings to any other source of finance, and then will choose debt, and last of all equity. The order of preference is: retained earnings, straight debt, convertible debt, preference shares and equity shares.

203 BKB Co

Text references. WACC is covered in Chapter 15. The advantages of issuing convertible bonds are discussed in Chapter 12.

Top tips. If you know your formulas well, the calculations in part (a) should be straightforward. You should know that overdrafts should not be considered as part of the capital structure.

You will need to apply logic in answering part (b). In part (c), briefly plan your answer before you start to answer the question.

Easy marks. Marks are available for straightforward calculations in part (a).

ACCA examination team's comments. Part (a) Few answers were able to calculate correctly the cost of the preference shares and some answers chose to use the dividend percentage relative to nominal as the cost of capital, or to assume a value for the cost of capital. Some answers mistakenly calculated the after-tax cost of the preference shares. As preference shares pay a dividend, which is a distribution of after-tax profit, they are not tax-efficient. A common error was to mix bond-related values (such as the \$4.90 after-tax interest payment) with total debt-related values (such as the \$21 million market value of the bond issue), producing some very high values in the linear interpolation calculation. Some candidates were unable to calculate the future share price as part of the conversion value calculation. Most candidates were able to calculate a WACC value, although some omitted the cost of preference shares from the calculation. Part (b) Many answers were not of a high standard and tried to make some general points about market efficiency or about the window-dressing of financial statements. The important point here is that the weightings used in the WACC calculation need to reflect the relative importance of the different sources of finance used by a company if the WACC is to be used in investment appraisal.

Marking scheme

		Marks
(a)	Calculation of cost of equity using CAPM	2
	Calculation of bond market price	0.5
	Calculation of current share price	0.5
	Calculation of future share price	1
	Calculation of conversion value	1
	After-tax interest payment	1
	Setting up interpolation calculation	1
	Calculation of after-tax cost of debt	1
	Calculation of cost of preference shares	1
	Calculation of after-tax WACC	2
	Explanation of any assumptions made	<u>1</u>
		12
(b)	Market values reflect current market conditions	1-2
	Market values and optimal investment decisions	1-2
	Other relevant discussion or illustration	<u>1-2</u>
		Maximum
(c)	Self-liquidating	1
	Lower interest rate	1
	Increase in debt capacity on conversion	1
	Other relevant advantages of convertible debt	<u>1-3</u>
		Maximum
		4
		<u>20</u>

(a) **Equity**

The MV of equity is given as \$125m.

$$\text{CAPM: } E(r_i) = R_f + \beta_i(E(r_m) - R_f)$$

$$R_f = \text{Risk-free rate} = 4\%$$

$$\beta_i = \text{Equity beta} = 1.2$$

$$(E(r_m) - R_f) = \text{Equity risk premium} = 5\%$$

$$\text{Therefore the cost of equity} = 4\% + 1.2 \times 5\% = 10\%$$

Convertible bonds

Assume that bondholders will convert if the MV of 19 shares in five years' time is greater than \$100.

$$\text{MV per bond} = \$100 \times \$21m/\$20m = \$105$$

$$\text{MV per share today} = \$125m/25m = \$5$$

$$\text{MV per share in five years' time} = \$5 \times 1.045 = \$6.08 \text{ per share}$$

$$\text{Conversion value} = \$6.08 \times 19 = \$115.52$$

The after-tax cost of the convertible bonds can be calculated by linear interpolation, assuming the bondholders will convert.

Time	Cash flow \$	Discount factor	Present value \$	Discount factor	Present value \$
0	(105)	(7%) 1	(105)	(5%) 1	(105)
1-5	4.9**	4.100	20.09	4.329	21.21
5	115.52	0.713	82.37	0.784	90.57
			(2.54)		6.78

** after-tax interest payment = $7 \times (1 - 0.3) = \$4.90$ per bond

Cost of convertible bonds = $5 + [(7 - 5) \times 6.78 / 6.78 + 2.54] = 5 + 1.45 = 6.45\%$

Preference shares

After-tax cost of preference shares = $5\% \times \$10m / \$6.25m = 8\%$

WACC

Total value = $\$125m + \$21m + \$6.25m = \$152.25m$

After-tax WACC = $[(\$125m \times 10\%) + (\$21m \times 6.45\%) + (\$6.25m \times 8\%) / \$152.25m]$

After-tax WACC = 9.4% per year

Note: As overdraft represents a short-term source of finance, it has been assumed not to form part of the company's capital and has therefore been excluded from the WACC calculation. The overdraft is large, however, and seems to represent a fairly constant amount. The company should evaluate whether it should be taken into account.

- (b) Market values are preferable to book values when calculating WACC, because they reflect the current value of the company's capital.

If book values are used instead of market values, this will seriously underestimate the proportion that equity represents in the company's capital structure. This is because the market value of ordinary shares is usually significantly higher than its nominal book value.

Understating the impact of the cost of equity on the WACC will most likely cause the WACC to be understated, since, as we can see in the answer above, the cost of equity is greater than the cost of debt. Under-estimating the WACC will skew the company's investment appraisal process as a lower discount rate is used, and cause the company to make sub-optimal investment decisions.

Using book values instead of market values will also change the value of debt in the company's capital structure. The impact of understating or overstating the value of debt would be less significant than is the case for equity, because debt instruments are often traded at close to their nominal value.

- (c) Convertible bonds are attractive for companies for the following reasons:

- **Lower rates of interest:** Investors are normally willing to accept a lower coupon rate of interest on convertible bonds, because of the additional value offered by the conversion rights. This helps to ease the burden on cash flows.
- **The possibility of not redeeming the debt at maturity:** Companies issue convertible bonds with the expectation that they will be converted. If the bonds are converted, this frees the company from a cash repayment at redemption. The cash advantage is further augmented by the greater flexibility that equity shares allow in terms of returns.
- **Availability of finance:** Issuing convertible bonds may allow greater access to finance, as lenders who would otherwise not provide ordinary loan finance may be attracted by the conversion rights.
- **Impact on gearing:** On conversion, the company's gearing will be reduced not only because of the removal of debt, but also because equity replaces the debt. This can send positive signals about the company's financial position.
- **Delayed equity:** The fact that convertible bonds allow the issue of shares at a pre-determined point in the future permits the company to plan the impact on its earnings per share upon conversion.

204 Fence Co

Text references. Cost of debt, capital asset pricing model, risk and WACC are covered in Chapter 15.

Top tips. Be careful not to miss out the tax effect in part (b). Try not to mix up systematic risk and unsystematic risk in part (c).

Easy marks. There are easy marks for calculations in part (a). The limitations of CAPM should always present straightforward marks.

ACCA examination team's comments. For part (a) the examination team commented that students should aim to calculate a reasonably accurate after-tax cost of debt. For example, if the first cost of debt estimate produces a negative NPV, then the second estimate should be lower as the first estimate was too high.

Marking scheme

	Marks
(a) Calculation of equity risk premium	1
Calculation of cost of equity	1
After-tax interest payment	1
Setting up IRR calculation	1
Calculating after-tax cost of debt	1
Market value of equity	0.5
Market value of debt	0.5
Calculating WACC	<u>1</u>
	7
(b) Ungearing proxy company equity beta	2
Regearing equity beta	1
Calculation of cost of equity	<u>1</u>
	4
(c) Risk diversification	1
Systematic risk	1
Unsystematic risk	1
Portfolio theory and the CAPM	<u>1</u>
	4
(d) 1-2 marks per point made	Maximum
	<u>5</u>
	<u><u>20</u></u>

- (a) After-tax cost of debt (K_d) can be calculated by linear interpolation.

Year		Cash flow	Discount factor 4%	PV	Discount factor 5%	PV
			\$	\$	\$	
0	Market value	(107.14)	1.000	(107.14)	1.000	(107.14)
1 – 7	Interest ($7 \times (1 - 0.2)$)	5.60	6.002	33.61	5.786	32.40
7	Redemption	100.00	0.760	76.00	0.711	71.10
				2.47		(3.64)

$$\text{After tax cost of debt} = 4\% + \frac{2.47}{2.47 + 3.64} (5\% - 4\%) = 4.4\%$$

Cost of equity (K_e) can be found using CAPM.

$$\begin{aligned} E(r_i) &= R_f + \beta_i(E(r_m) - R_f) \\ &= 4 + 0.9(11 - 4) \\ &= 10.3\% \end{aligned}$$

Market value of equity (V_e) = \$10m × \$7.50 = \$75m

Market value of debt (V_d) = \$14m × $\frac{107.14}{100}$ = \$15m

$$\begin{aligned} \text{WACC} &= \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d \\ &= \left[\frac{75}{75+15} \right] 10.3 + \left[\frac{15}{75+15} \right] 4.4 \\ &= 9.3\% \end{aligned}$$

- (b) Ungear to remove the financial risk

$$\beta_a = \beta_e \times \frac{V_e}{V_e + V_d(1-T)}$$

$$\beta_a = 1.2 \times \frac{54m}{54m + (12m \times 0.8)}$$

$$= 1.019$$

Convert back to a geared beta

$$\beta_e = \beta_a \times \frac{V_e + V_d(1-T)}{V_e}$$

$$\beta_e = 1.019 \times \frac{75 + 15(1-0.2)}{75}$$

$$= 1.182$$

Use CAPM to estimate cost of equity.

Equity or market risk premium = 11 – 4 = 7%

Cost of equity = 4 + (1.182 × 7) = 4 + 8.3 = 12.3%

- (c) **Unsystematic** risk can be **diversified away** but even well diversified portfolios will be exposed to **systematic risk**. This is the risk **inherent in the market as a whole**, which the shareholder cannot mitigate by holding a diversified investment portfolio.

Portfolio theory is concerned with **total risk** (systematic and unsystematic). The **capital asset pricing model** assumes that investors will hold a fully diversified portfolio and therefore ignores unsystematic risk.

- (d) **Diversification**

Under the CAPM, the return required from a security is **related** to its **systematic risk** rather than its total risk. Only the risks that **cannot** be **eliminated** by diversification are **relevant**. The assumption is that investors will hold a **fully diversified portfolio** and therefore deal with the unsystematic risk themselves. However, in practice, markets are **not totally efficient** and investors do not all hold fully diversified portfolios. This means that total risk is relevant to investment decisions, and that therefore the relevance of the CAPM may be limited.

Excess return

In practice, it is difficult to determine the excess return ($R_m - R_f$). **Expected rather than historical returns** should be used, although historical returns are used in practice.

Risk-free rate

It is similarly difficult to **determine the risk-free rate**. A risk-free investment might be a government security; however, interest rates vary with the term of the debt.

Risk aversion

Shareholders are risk averse, and therefore **demand higher returns** in compensation for increased levels of risk.

Beta factors

Beta factors based on historical data may be a **poor basis** for future **decision making**, since evidence suggests that beta values fluctuate over time.

Unusual circumstances

The CAPM is unable to forecast accurately returns for companies with low price/earnings ratios, and to take account of seasonal 'month-of-the-year' effects and 'day-of-the-week' effects that appear to influence returns on shares.

205 Tinep Co

Text references. CAPM and the weighted average cost of capital is covered in Chapter 15, and rights issues are covered in Chapter 12. Scrip dividends are explained in Chapter 13.

Top tips. Part (a) is a WACC question which, with practice, is straightforward. You need to calculate the cost of equity using CAPM and the cost of debt using the IRR formula. The WACC formula is given on the exam formula sheet. Part (b) requires you to have an understanding of rights issues. Use headings in your answer to this part to help the marker.

Easy marks. Part (a) has lots of easy calculation marks, even if you make a mistake in some of your workings. Part (b) contains some easy marks if you've learned your theory. Part (c) is a textbook explanation of a scrip dividend and the advantages and disadvantages from a company's point of view.

Marking scheme

		Marks
(a)	Cost of equity	1
	After-tax interest payment	1
	Setting up IRR calculation	1
	After-tax cost of debt of loan notes	1
	Market values	1
	Market value WACC	1
	Book value WACC	1
	Comment on difference	<u>2</u>
		9
(b)	Issue price	1-2
	Relative cost	1-2
	Ownership and control	1-2
	Gearing and financial risk	<u>1-2</u>
		Maximum <u>6</u>
(c)	Explanation of scrip dividend	1-2
	Advantages of scrip dividend to company	2-3
	Disadvantages of scrip dividend to company	<u>2-3</u>
		Maximum <u>5</u>
		<u>20</u>

(a) Cost of equity using CAPM

$$K_e = R_f + \beta(E(r_m) - R_f) \quad R_f = 4\%, E(R_m) - R_f = 6\% \text{ (market premium)}$$

$$K_e = 4 + (1.15 \times 6) = 10.9\%$$

After-tax cost of debt K_d

Time		Cash flow (\$)	Discount factor 4%	Present value (\$)	Discount factor 5%	Present value (\$)
0	Market value	(103.50)	1	(103.50)	1	(103.50)
1-6	Interest	(6% × 100) × 75% = 4.5	5.242	23.59	5.076	22.84
6	Redemption	106	0.790	83.74	0.746	79.08
				<u>3.83</u>		<u>(1.58)</u>

$$K_d = 4 + \frac{3.83}{3.83 + 1.58} \times 1 = 4.7\%$$

Market value of equity

Number of shares = \$200m / 0.5 = 400m

Market value = 400m × \$5.85 = \$2,340m

Market value of debt

$$200m \text{ loan notes} \times \frac{103.50}{100.00} = \$207m$$

Total market value = \$2,340 + \$207 = \$2,547

Using the formula from the formula sheet:

$$WACC = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d$$

WACC using market values

$$WACC = (2,340/2,547)10.9\% + (207/2,547)4.7\% = 10.40\%$$

WACC using book values

$$WACC = (850/1,050)10.9\% + (200/1,050)4.7\% = 9.72\%$$

The WACC using book values is lower than the WACC using market values. This is because the market values of shares are nearly always higher than the nominal values. Book values are based on historical costs and their use will underestimate the impact of the cost of equity finance on the average cost of capital. Market values should always be used if data is available. If the WACC is understated then unprofitable projects will be accepted.

(b) Considerations of rights issue

Issue price

Tinep must set a price which is low enough to secure the acceptance of shareholders but not too low so as to dilute earnings per share. This balance can be difficult to estimate.

Relative cost

Rights issues are cheaper than, say, IPOs to the general public. This is partly because no prospectus is normally required, partly because the admin is simpler and partly because the cost of underwriting will be less.

Ownership and control

Relative voting rights are unaffected if shareholders take up their rights.

Gearing and financial risk

The finance raised may be used to reduce gearing by increasing share capital. The shareholders may see this as a positive move depending on their risk preference.

- (c) A scrip dividend is a dividend paid by the issue of additional company shares, rather than by cash. It is offered *pro rata* to existing shareholdings.
- From a company point of view there are a couple of main advantages of scrip dividends. They can preserve a company's cash position if a substantial number of shareholders take up the share option and a share issue will decrease the company's gearing, and may therefore enhance its borrowing capacity.
- There are two main disadvantages of scrip dividends. Assuming that dividend per share is maintained or increased, the total cash paid as a dividend will increase. Scrip dividends may be seen as a negative signal by the market ie the company is experiencing cash flow issues.

206 Grenarp Co

Text references. Rights issues and sources of finance are covered in Chapter 12. Capital structure is covered in Chapter 16.

Top tips. For part (a), start by considering the planned rights issue and calculate the rights issue price, the number of new shares offered in the rights issue, the net cash raised after issue costs and the TERP. For part (b), start by defining an optimal capital structure.

Easy marks. There are easy marks for calculations in part (a) and you should score well in parts (b) and (c) if you have learnt the material on capital structure and sources of finance.

ACCA examination team's comments. For part (a) many students did not gain many marks. Some answers adopted a 5 for 1 basis for the rights instead of 1 for 5. Some students added the issue costs to the cash raised figure provided. Many answers to part (b) were unsatisfactory. Some answers incorrectly stated that an optimal capital structure was a 50/50 mix of equity and debt.

Marking scheme

	Marks
(a) Rights issue price	0.5
New shares issued	0.5
Net cash raised by rights issue	0.5
TERP per share	1
Buy-back price of loan notes	0.5
Nominal value of loan notes redeemed	1
Before-tax interest saving	0.5
After-tax interest saving	0.5
Revised earnings	0.5
Revised earnings per share	0.5
Revised share price using P/E ratio method	1
Comment on effect of redemption on shareholders' wealth	<u>1</u>
	8
(b) Traditional view of capital structure	1-3
M&M views of capital structure	1-3
Other relevant discussion	<u>1-3</u>
	Maximum <u>7</u>
(c) 1-2 marks per source of finance	Maximum <u>5</u>
	<u>20</u>

- (a) Rights issue price = $3.50 \times 0.8 = \$2.80$ per share
 Grenarp Co currently has 20 million shares in issue (\$10m/0.5)
 The number of new shares issued = $20m/5 = 4$ million shares
 Cash raised by the rights issue before issue costs = $4m \times 2.80 = \$11,200,000$
 Net cash raised by the rights issue after issue costs = $11,200,000 - 280,000 = \$10,920,000$
 Revised number of shares = $20m + 4m = 24$ million shares
 Market value of Grenarp Co before the rights issue = $20,000,000 \times 3.50 = \$70,000,000$
 Market value of Grenarp Co after the rights issue = $70,000,000 + 10,920,000 = \$80,920,000$
 Theoretical ex rights price per share = $80,920,000/24,000,000 = \3.37 per share
(Alternatively, issue costs are \$0.07 per share (280,000/4m) and this is a 1 for 5 rights issue, so the theoretical ex rights price = $(5 \times 3.50 + (2.80 - 0.07))/6 = 20.23/6 = \3.37 per share)
 Redemption price of loan notes = $104 \times 1.05 = \$109.20$ per loan note
 Nominal value of loan notes redeemed = $10,920,000/(109.20/100) = \$10,000,000$
 Before-tax interest saving = $10,000,000 \times 0.08 = \$800,000$ per year
 After-tax interest saving = $800,000 \times (1 - 0.3) = \$560,000$ per year
 Earnings after redeeming loan notes = $8,400,000 + 560,000 = \$8,960,000$ per year
 Revised earnings per share = $100 \times (8,960,000/24,000,000) = \0.373 per share
 Price/earnings ratio of Grenarp Co before the rights issue = $3.50/0.42 = 8.33$ times
 This price/earnings ratio is not expected to be affected by the redemption of loan notes
 Share price of Grenarp Co after redeeming loan notes = $8.33 \times 0.373 = \$3.11$ per share
 The wealth of shareholders of Grenarp Co has decreased as they have experienced a capital loss of \$0.26 per share (\$3.37 – \$3.11) compared to the theoretical ex rights price per share.

- (b) The capital structure is considered to be optimal when the weighted average cost of capital (WACC) is at a minimum and the market value of a company is at a maximum. The goal of maximising shareholder wealth might be achieved if the capital structure is optimal.
 The question of whether Grenarp Co might achieve its optimal capital structure following the rights issue can be discussed from a theoretical perspective by looking at the traditional view of capital structure, the views of Miller and Modigliani on capital structure, and other views such as the market imperfections approach. It is assumed that a company pays out all of its earnings as dividends, and that these earnings and the business risk of the company are constant. It is further assumed that companies can change their capital structure by replacing equity with debt, and vice versa, so that the amount of finance invested remains constant, irrespective of capital structure. The term 'gearing up' therefore refers to replacing equity with debt in the context of theoretical discussions of capital structure.

Traditional view

The traditional view of capital structure, which ignores taxation, held that an optimal capital structure did exist. It reached this conclusion by assuming that shareholders of a company financed entirely by equity would not be very concerned about the company gearing up to a small extent. As expensive equity was replaced by cheaper debt, therefore, the WACC would initially decrease. As the company continued to gear up, shareholders would demand an increasing return as financial risk continued to increase, and the WACC would reach a minimum and start to increase. At higher levels of gearing still, the cost of debt would start to increase, for example, because of bankruptcy risk, further increasing the WACC.

Views of Miller and Modigliani

Miller and Modigliani assumed a perfect capital market, where bankruptcy risk does not exist and the cost of debt is constant. In a perfect capital market, there is a linear relationship between the cost of equity and financial risk, as measured by gearing. Ignoring taxation, the increase in the cost of equity as gearing increases exactly offsets the decrease in the WACC caused by the replacement of expensive equity by cheaper debt, so that the WACC is constant. The value of a company is therefore not affected by its capital structure.

When Miller and Modigliani included the effect of corporate taxation, so that the after-tax cost of debt was used instead of the before-tax cost of debt, the decrease in the WACC caused by the replacement of expensive equity by cheaper debt was greater than the increase in the cost of equity, so that the WACC decreased as a company geared up. The implication in terms of optimal capital structure was that a company should gear up as much as possible in order to decrease its WACC as much as it could.

Market imperfections view

When other market imperfections are considered in addition to the existence of corporate taxation, the view of Miller and Modigliani that a company should gear up as much as possible is no longer true. These other market imperfections relate to high levels of gearing, bankruptcy risk and the costs of financial distress, and they cause the cost of debt and the cost of equity to increase, so that the WACC increases at high levels of gearing.

Grenarp Co

The question of whether Grenarp Co might achieve its optimal capital structure following the rights issue can also be discussed from a practical perspective, by considering if increasing the gearing of the company would decrease its WACC. This would happen if the marginal cost of capital of the company were less than its WACC. Unfortunately, there is no information provided on the marginal cost of capital of Grenarp Co, although its gearing is not high. Before the rights issue, the debt/equity ratio of Grenarp Co was 35% on a book value basis and 45% on a market value basis, while after the redemption of loan notes the debt/equity ratio would fall to 21% on a book value basis and 28% on a market value basis.

- (c) Remember that the question only asked for three sources of long-term finance.

Bonds

Bonds are long-term debt capital raised by a company for which interest is paid, usually half yearly and at a fixed rate. Holders of bonds are therefore long-term payables for the company. Bonds issued by large companies are marketable, but bond markets are small. They can be issued in a variety of foreign currencies.

Deep discount bonds

Deep discount bonds are bonds or loan notes issued at a price which is at a large discount to the nominal value of the notes, and which will be redeemable at nominal value (or above nominal value) when they eventually mature. The coupon rate of interest will be very low compared with yields on conventional bonds with the same maturity. For a company with specific cash flow requirements, the low servicing costs during the currency of the bond may be an attraction, coupled with a high cost of redemption at maturity. The main benefit of deep discount bonds for a company is that the interest yield on the bonds is lower than on conventional bonds. However, it will have to pay a much larger amount at maturity than it borrowed when the bonds were issued. Deep discount bonds defer much of the cost of the debt.

Convertible bonds

Convertible bonds are bonds that give the holder the right to convert to other securities, normally ordinary shares, at a pre-determined price/rate and time. The coupon rate of interest is normally lower than on similar conventional bonds. They give the bondholders the right (but not an obligation) to convert their bonds at a specified future date into new equity shares of the company, at a conversion rate that is also specified when the bonds are issued. If the bonds are converted there can be a reduction in the gearing of the issuing company.

Long-term bank loan

A bank loan can be obtained with interest paid annually, bi-annually or quarterly at either a fixed rate or floating rate of interest. Bank loans are often secured and a bank may charge higher interest for an unsecured loan compared with a similar secured loan. Repayments usually include a capital element and an interest element, with the proportion of interest decreasing over time and the proportion of capital increasing over time.

MCQ bank – Business valuations

- 207 C The replacement value of the business attempts to calculate the cost of setting up an equivalent venture. This is more than simply tangible assets, it includes intangibles such as brand value, customer and supply networks, and intellectual property. It is very difficult to calculate in practice.

Syllabus area F2a

- 208 C \$4

Statement of financial position value of equity = ordinary shares + reserves = (1 + 5=) \$6 million.

Net book value of revalued assets = \$10m × 3/10 = \$3m.

Professional valuation of revalued assets = \$1m; (3 – 1 =) \$2m lower than net book value.

Number of shares = \$1m / \$1 per share = 1 million shares.

Realisable value per share = (\$6m – \$2m) / 1 million shares = \$4 per share.

Syllabus area F2a

209 A $P_0 = \frac{D_0(1+g)}{(r_e - g)}$ Given on the formula sheet

Growth 'g' – Dividends grew from (\$0.50–\$0.10) = \$0.40 to \$0.50 in 3 years. This is an average annual growth rate of:

$$\$0.40 (1+g)^3 = \$0.50$$

$$(1+g) = \sqrt[3]{0.5/0.4}$$

$$g = 0.077 = 7.7\%$$

$$P_0 = \frac{\$0.50(1+0.077)}{(0.10 - 0.077)} = \$23.41$$

Syllabus area F2c

- 210 A Statement 1 needs to be assumed: If D_0 is not typical, a better valuation would include the dividend that would have been paid if D_0 were in line with historical trends.

Statement 2 needs to be assumed: Only one rate for growth is included in the formula.

Statement 3 needs to be assumed: Only one cost of equity is included in the formula.

Statement 4 does not need to be assumed: Minority shareholders are entitled to dividends only, hence this valuation technique is in fact best suited to a minority shareholding.

Syllabus area F2c

- 211 D \$672m

$$g = br.$$

$$g = 0.2 \times 0.6 = 0.12$$

$$MV = \frac{D_0(1+g)}{k_e - g} = \frac{60m \times 1.12}{0.22 - 0.12} = \$672m$$

Syllabus area F2b

- 212 C Earnings yield is lower. P/E ratio is higher.

For DD Co, P/E = 12, Earnings yield (=1/(P/E ratio)) = 0.0833 = 8.3%.

For competitor, P/E (= 1/earnings yield) = 10, Earnings yield = 10%.

Syllabus area F2b

- 213 D Corporation tax is not relevant as investors pay market price and they receive the gross dividend.

Redemption value = $(\$100 \times 1.15) = \115 cash

Conversion value = $P_0(1+g)R = (4 \times 1.1^3 \times 25) = \133.10 worth of shares.

Investors would opt to convert, hence the redemption value built into market price will be \$133.10.

<i>Time</i>		<i>Discount factor 10%</i>	<i>Present value</i>
	\$		\$
1-3	Interest	9	2.487
3	Redemption	133.10	0.751
			<u>122.3411</u>

So current market value = \$122.34

Syllabus area F3a

- 214 D Market capitalisation refers to the total value of a company's share capital as valued by the capital markets / stock exchange.

Syllabus area F4b

- 215 C Options 1 and 3 do not consider intangible assets such as brand value, intellectual property and supply networks.

As the cost of setting up an equivalent venture is less than the net present value of the current business, the former is the maximum HAL Co should pay for SO Co.

Syllabus area F2a

- 216 A Should NCW Co purchase CEW Co it will acquire a cash flow of $(\$10 + 2) = \$12m$ per annum, assuming that CEW invests the \$6m in new machinery. (Note: it should do this as its net present value = $\$2m/0.1 - \$6m = \$14m$.)

Therefore the value would be: $\$12m/0.1 - \$6m = \$114$ million. Note the \$12m is a perpetuity.

Syllabus area F2c

CBE style OTQ bank – Market efficiency

- 217 A strong form efficient market

As share price reaction appears to have occurred before the information concerning the new project was made public, this suggests a strong-form efficient market (and quite possibly insider dealing) because in a strong form efficient market the share price reflects even privately held information.

Syllabus area E4a

- 218 Semi-strong or strong form efficient

A weak form efficient market will not react to new, publicly announced information hence a strategy based around using publicly available information could work.

In a semi strong form market, all publicly available information is already assumed to be reflected in the share price, hence reading the newspaper to help formulate a strategy is unlikely to work.

In a strong form efficient market, all publicly available information is already reflected in the share price. Again, reading the newspaper is therefore unlikely to add any value to any investment strategy.

Syllabus area E4a

- 219 Completely inefficient

In a weak form efficient market, all investors know previous share price movements, which will stop patterns consistently and predictably repeating. Sarah must therefore believe the markets are not even weak form efficient.

Syllabus area E4a

220

- The majority of share price reaction to news occurs when it is announced
'Repeating patterns appear to exist' supports the view that markets are completely inefficient.
'Attempting to trade on consistently repeating patterns is unlikely to work' supports the view that markets are weak form efficient.
'The majority of share price reaction to news occurs when it is announced' supports the view that markets are semi-strong form efficient because in such a market share prices reflect publicly available information, but not privately held information. Share price will therefore not reflect information before it is announced.
'Share price reaction occurs before announcements are made public' supports the view that markets are strong form efficient: they reflect all available information including that which is privately held.

Syllabus area E4a

221

- Statement 1 is true and statement 2 is false.
- Fundamental analysis values shares according to the future incremental cash flows associated with owning that share, discounted by the investor's required rate of return which reflects the perceived risk associated with that investment.
- Technical analysis (or charting) attempts to predict share price movements by anticipating repeating patterns following detailed analysis of past share price movements.

Syllabus area E4a

Phobis Co

222 D \$20 million

Price/earnings ratio method of valuation

Market value = P/E ratio × EPS

EPS = 40.0c

Average sector P/E ratio = 10

Value of shares = $40.0 \times 10 = \$4.00$ per share

Number of shares = 5 million

Value of Danoca Co = \$20 million

223 A Statement 1 is true and statement 2 is false.

The current share price of Danoca is \$3.30 which equates to a P/E ratio of 8.25 ($3.30/0.4$). This is lower than the average sector P/E ratio of 10 which suggests that the market does not view the growth prospects of Danoca as favourably as an average company in that business sector.

A *lower* than average P/E ratio implies that an acquisition by Phobis could result in improved financial performance of Danoca, assuming that Phobis has the competences and skills to transfer to Danoca.

224 A \$14.75 million

Dividend growth model method of valuation

$$P_0 = \frac{D_0(1+g)}{K_e - g}$$

Note: The formula sheet in this exam uses r_e instead of K_e

D_0 can be found using the proposed payout ratio of 60%.

$$D_0 = 60\% \times 40c = 24c$$

$$\begin{aligned} \text{Value of shares} &= \frac{0.24 \times (1 + 0.045)}{0.13 - 0.045} \\ &= \$2.95 \end{aligned}$$

$$\text{Value of Danoca Co} = \$2.95 \times 5 \text{ million shares} = \$14.75 \text{ million}$$

225 **B** \$16.5m

Market capitalisation of Danoca is $\$3.30 \times 5\text{m} = \16.5m

226 **B** 1 and 3

'Under weak form hypothesis of market efficiency, share prices reflect all available information about past changes in share price' is true.

'If a stock market displays semi-strong efficiency then individuals can beat the market' is not true. Individuals cannot beat the market because all information publicly available will already be reflected in the share price.

'Behavioural finance aims to explain the implications of psychological factors on investor decisions' is true.

'Random walk theory is based on the idea that past share price patterns will be repeated' is not true. Chartists believe that past share price patterns will be repeated.

Corhig Co

227 \$15m

The value of the company can be calculated using the P/E ratio valuation as:

Expected future earnings × P/E ratio

Using the Corhig Co's forecast earnings for Year 1, and taking the average P/E ratio of similar listed companies, Corhig Co can be valued at $\$3\text{m} \times 5 = \15m .

228 Statement 1 is true and statement 2 is false.

The valuation above does not take into consideration the fact that earnings are expected to rise by 43% over the next three years. Instead of using Year 1 earnings, we could use average expected earnings over the next three years of $\$3.63\text{m}$. This would give us a more appropriate valuation of $\$18.15\text{m}$.

The P/E ratio of 5 is taken from the average of similar listed companies. However, P/E ratios vary from company to company depending on each company's business operations, capital structures, gearing, and markets. The ratio used here is therefore subject to a high degree of uncertainty. An inaccurate P/E ratio would call the valuation into question, as it is so crucial to the calculation.

Corhig Co is listed, so it would be much more appropriate to use the company's own current P/E ratio instead.

229 PV of Year 2 dividend = $500,000 \times 0.797 = \$398,500$ (using cost of capital of 12%)

230 10.32%

After-tax cost of debt = $6 \times (1 - 0.2) = 4.8\%$

Revised after-tax WACC = $14 \times 60\% + 4.8 \times 40\% = 10.32\%$

231 Risk linked to the extent to which the company's profits depend on fixed, rather than variable costs is business risk.

Risk that shareholder cannot mitigate by holding a diversified investment portfolio is systematic risk.

Risk that shareholder return fluctuates as a result of the level of debt the company undertakes is financial risk.

Close Co

232 \$490 million

Net assets

As no additional information is available, this is based on book values.

$$\text{Net assets} = 720 - 70 - 160 = \$490 \text{ million}$$

233 \$693 million

Dividend growth model

Dividends are expected to grow at 4% per year and the cost of equity is 10%.

$$P_0 = \frac{40 \times 1.04}{0.10 - 0.04}$$

$$= 41.6 / 0.06$$

$$= \$693 \text{ million}$$

234 \$605.5 million

Earnings yield

Earnings are the profit after tax figure of \$66.6 million and the earnings yield that can be used for the valuation is 11%.

$$\text{ie } 66.6 / 0.11 = \$605.5 \text{ million.}$$

235 Both statements are true.

The DGM is very sensitive to changes in the growth rate. A 1% change in the growth rate can give a significantly different valuation.

If dividends are expected to be paid at some point in the future, the DGM can be applied at that point to create a value for the shares which can then be discounted to give the current ex dividend share price.

In a situation where dividends are not paid and are not expected to be paid the DGM has no use.

236 A The sum of the present values of the future interest payments + the present value of the bond's conversion value

MCQ bank – Foreign currency risk

237 D A is a financial reporting implication of retranslating foreign assets/liabilities and not immediately related to cash.

B is the impact on business value of long-term exchange rate trends.

D is correct: transaction risk refers to the fact that the spot rate may move between point of sale (denominated in foreign exchange) and when the customer pays, such that the net domestic receipt differs from expected.

Syllabus area G1a

238 A A strengthening Euro means Euros are getting more expensive: they will cost more dollars.

The exchange rate becomes €1 : \$2.40 (\$2 × 1.2)

The Euro receipt will be \$1,000 / 2.4 = €416.67

Syllabus area G1a

239 B The spot rate for translating \$ to € is $2.0000 + 0.003 = \$2.003 / €$ – the worst rate for someone selling dollars. The dollar is at a premium so subtract the premium because the exchange rate is to the Euro so if the \$ is strengthening then the Euro is weakening on the forward market.

$$\$2.003 / € - \$0.002 = \$2.001 / €$$

The Euro receipt will be \$2,000 / 2.001 = €999.50.

Syllabus area G3a

- 240 **C** Statements 1 and 2 are true: As they are binding contracts, forward contracts fix the rate to that rate noted in the contract. By the same token therefore they are not flexible (statement 3 is false.) The contract contains named parties so the contracts cannot be sold on to someone else (statement 4 is false).

Syllabus area G3a

- 241 **D** The US company should borrow US\$ immediately and send it to Europe. It should be left on deposit in € for 3 months then used to pay the supplier.

The amount to put on deposit today = €3.5m × 1/(1 + (0.01/4)) = €3,491,272.

This will cost €3,491,272 × \$2 = \$6,982,544 today (note \$2 is the worst rate for buying €)

Assuming this to be borrowed in US\$, the liability in 3 months will be:

\$6,982,544 × [1 + (0.08/4)] = \$7,122,195.

Syllabus area G3a

- 242 **B** They are only available in a small amount of currencies. They are probably an imprecise match for the underlying transaction.

Statement 1: False: Futures contracts are subject to a brokerage fee only (for example there is no spread on the rate) so are relatively cheap.

Statement 2: True: It is not possible to purchase futures contracts from every currency to every other currency – there are only limited combinations available.

Statement 3: False. Futures contracts can be 'closed out' so if, for example, customers pay early or late, the timing of the futures hedge can accommodate this.

Statement 4: True. Futures contracts are for standardised amounts so may not match the size of the transaction being hedged precisely.

Syllabus area G3a

- 243 **A** The Farland business will want to sell the US \$ when they receive them which implies either a US\$ put (sell) option purchased in Farland, or a Splot call (buy) option purchased in America. In this second alternative payment would be in US\$, effectively giving up US\$ in return for Splot.

Syllabus area G3c

- 244 **B** Using Interest Rate Parity:

$$F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

The quarterly rates are: US: 8%/4 = 2%; Europe 4%/4 = 1%

Forward rate = 2 × 1.02/1.01 = \$2.0198 : €1

Syllabus area G2b

- 245 **D** Purchasing power parity means that the cost of identical goods in different economies should be the same. If they aren't the same, businesses will buy from one location and sell to the other to make a profit, with the interaction of supply and demand bringing the prices back into line. Any differences in inflation between countries therefore creates supply and demand for currencies that evens out the price differences inflation causes.

Syllabus area G2b

- 246 **C** Exporters are worse off. Importers are better off.

If a currency strengthens it gets more expensive (eg If the Euro strengthens it may move from \$1:€1 to \$2:€1) meaning exporters will receive fewer € for their given \$ sales, and importers will pay fewer € to satisfy their given \$ debts with suppliers.

Syllabus area G1a

MCQ bank – Interest rate risk

- 247 **B** 'A' describes gap exposure. C and D is interest rate risk but not specifically basis risk.

Syllabus area G1b

- 248 **A** Gap exposure occurs when interest rates on deposits and on loans move at different times. The fact that the company has benefited in this instance means the rates have moved favourably.

Syllabus area G1b

- 249 **D** Expectations theory: The shape of the curve reflects market expectations about future interest rate movements.

Liquidity preference theory explains why the curve is generally upward sloping – implying a higher periodic rate of return is required to compensate for money being tied up for longer with longer term debt.

Market segmentation theory explains why the curve may be kinked or even discontinuous as different investors (with different risk appetites) invest in different types of debt. For example, many banks will invest in short dated bonds, but pension funds are more likely to invest in long dated ones. The differences in the investor risk/return preferences are reflected through changes in the shape and steepness of the curve in places.

Syllabus area G2c

- 250 **B** The FRA guarantees a net interest payment of 8%.

As the loan has been signed for 7%, ADB Co will need to pay the bank $1\% \times \$4\text{million} \times (6/12) = \$20,000$.

Syllabus area G4a

- 251 **D** Statement 1: Options don't have to be exercised so if an option would otherwise yield a loss, it can be abandoned.

Statement 2: As the question refers to exchange traded options this is true. Over-the-counter options however cannot be traded.

Statement 3: Sizeable premiums are payable for the ability to abandon options that aren't in the investor's favour.

Statement 4: Exchange traded options are standardised contracts so are for standard sized loans/deposits. They aren't tailored to an investor's particular amounts or dates. In comparison, over-the-counter options are tailored.

Syllabus area G4b

Rose Co

- 252 **C** Rose Co should enter into a forward contract to sell €750,000 in six months. Statement 1 is incorrect. Rose Co could use a money market hedge but €750,000 would have to be borrowed, then converted into dollars and then placed on deposit. Statement 2 is incorrect. An interest rate swap swaps one type of interest payment (such as fixed interest) for another (such as floating rate interest). Therefore it would not be suitable. Statement 4 is not suitable as Rose Co does not have any euro payments to make.

- 253 **A** \$310,945

Future value = $\text{€}750,000 / 2.412 = \$310,945$.

- 254 **C** 4%

Rose Co is expecting a euro receipt in six months' time and it can hedge this receipt in the money markets by borrowing euros to create a euro liability. Euro borrowing rate for six months = $8.0\% / 2 = 4\%$.

- 255 **B** Statement A is incorrect. Currency futures have a settlement date.
 Statement B is correct.
 Statement C is incorrect. The bank will make the customer fulfil the contract.
 Statement D is incorrect. Buying a currency option involves paying a premium to the option seller. This is a non-refundable fee which is paid when the option is acquired.

Syllabus area G3c

- 256 **B** Statement A is incorrect.
 Statement B is correct. The longer the term to maturity, the higher the rate of interest.
 Statement C is incorrect. Longer-term is considered less certain and more risky. It therefore requires a higher yield.
 Statement D is incorrect. Expectations theory states that future interest rates reflect expectations of future interest rate (not inflation rate) movements.

Syllabus area G2c

Zigto Co

257 \$251,256

Forward exchange contract

$$500,000/1.990 = \$251,256$$

Using the six-month forward rate under the forward exchange contract, Zigto Co will receive \$251,256.

258 \$248,781

Money market hedge

Expected receipt after 6 months = Euro 500,000

Euro interest rate over six months = 5%/2 = 2.5%

Euros to borrow now in order to have Euro 500,000 liability after six months = Euro 500,000/ 1.025 = Euro 487,805

Spot rate for selling euros today = 2 euro/\$

Dollar deposit from borrowed euros at spot rate = 487,805/2 = \$243,903

Dollar deposit rate over six months = 4%/2 = 2%

Value of the dollar deposit in six months time = \$243,903 × 1.02 = \$248,781

259 Euro 1.971/\$

Using purchasing power parity:

$$F_0 = S_0 \times (1+i_c)/(1+i_b)$$

Where:

F_0 = expected spot rate

S_0 = current spot rate

i_c = expected inflation in country c

i_b = expected inflation in country b

$$F_0 = 2.00 \times 1.03/1.045 = \text{Euro } 1.971/\$$$

260 Statement 1 is false. Statements 2 and 3 are true.

The expected future spot rate is calculated based on the relative inflation rates between two countries. The current forward exchange rates are set based on the relative interest rates between them.

Expectations theory states that there is an equilibrium between relative inflation rates and relative interest rates, so the expected spot rate and the current forward rate would be the same. Realistically, purchasing

power parity tends to hold true in the longer term, so is used to forecast exchange rates a number of years into the future. Short-term differences are not unusual.

- 261 Statement 1 is true. Transaction risk affects cash flows. Statement 2 is false. Translation risk does not affect cash flows so does not **directly** affect shareholder wealth. However, **investors** may be influenced by the changing values of assets and liabilities so a company may choose to hedge translation risk through, for example **matching the currency of assets and liabilities**. Statement 3 is true. Economic exposure can be difficult to avoid, although **diversification of the supplier and customer base** across different countries will reduce this kind of exposure to risk.

Mock Exams

ACCA

Paper F9

Financial Management

Mock Examination 1

Question Paper

Time allowed: 3 hours 15 minutes

ALL questions are compulsory and MUST be attempted

**DO NOT OPEN THIS PAPER UNTIL YOU ARE READY TO START UNDER
EXAMINATION CONDITIONS**

Section A – ALL 15 questions are compulsory and MUST be attempted

- 1 TKQ Co has just paid a dividend of 21 cents per share and its share price one year ago was \$3.10 per share. The total shareholder return for the year was 19.7%.

What is the current share price?

- A \$3.50
- B \$3.71
- C \$3.31
- D \$3.35

(2 marks)

- 2 Which of the following statements is/are correct?

- 1 Securitisation is the conversion of illiquid assets into marketable securities
- 2 The reverse yield gap refers to equity yields being higher than debt yields
- 3 Disintermediation arises where borrowers deal directly with lending individuals

- A 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

(2 marks)

- 3 Which of the following statements are correct?

- 1 Maximising market share is an example of a financial objective
- 2 Shareholder wealth maximisation is the primary financial objective for a company listed on a stock exchange
- 3 Financial objectives should be quantitative so that their achievement can be measured

- A 1 and 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

(2 marks)

- 4 A company whose home currency is the dollar (\$) expects to receive 500,000 pesos in six months' time from a customer in a foreign country. The following interest rates and exchange rates are available to the company:

Spot rate	15.00 peso per \$
Six-month forward rate	15.30 peso per \$

	<i>Home country</i>	<i>Foreign country</i>
Borrowing interest rate	4% per year	8% per year
Deposit interest rate	3% per year	6% per year

Working to the nearest \$100, what is the six-month dollar value of the expected receipt using a money-market hedge?

- A \$32,500
- B \$33,700
- C \$31,800
- D \$31,900

(2 marks)

5 Which of the following statements is correct?

- A A bonus issue can be used to raise new equity finance
 - B A share repurchase scheme can increase both earnings per share and gearing
 - C Miller and Modigliani argued that the financing decision is more important than the dividend decision
 - D Shareholders usually have the power to increase dividends at annual general meetings of a company
- (2 marks)

6 Which of the following statements is correct?

- A Tax allowable depreciation is a relevant cash flow when evaluating borrowing to buy compared to leasing as a financing choice
 - B Asset replacement decisions require relevant cash flows to be discounted by the after-tax cost of debt
 - C If capital is rationed, divisible investment projects can be ranked by the profitability index when determining the optimum investment schedule
 - D Government restrictions on bank lending are associated with soft capital rationing
- (2 marks)

7 An investment project has a cost of \$12,000, payable at the start of the first year of operation. The possible future cash flows arising from the investment project have the following present values and associated probabilities:

<i>PV of Year 1 cash flow</i>	<i>Probability</i>	<i>PV of Year 2 cash flow</i>	<i>Probability</i>
(\$)		(\$)	
16,000	0.15	20,000	0.75
12,000	0.60	(2,000)	0.25
(4,000)	0.25		

What is the expected value of the net present value of the investment project?

- A \$11,850
 - B \$28,700
 - C \$11,100
 - D \$76,300
- (2 marks)

8 A company has 7% loan notes in issue which are redeemable in seven years' time at a 5% premium to their nominal value of \$100 per loan note. The before-tax cost of debt of the company is 9% and the after-tax cost of debt of the company is 6%.

What is the current market value of each loan note?

- A \$92.67
 - B \$108.90
 - C \$89.93
 - D \$103.14
- (2 marks)

9 Which of the following statements concerning working capital management are correct?

- 1 Working capital should increase as sales increase
 - 2 An increase in the cash operating cycle will decrease profitability
 - 3 Overtrading is also known as under-capitalisation
- A 1 and 2 only
 - B 1 and 3 only
 - C 2 and 3 only
 - D 1, 2 and 3
- (2 marks)

10 Which of the following is LEAST likely to fall within financial management?

- A The dividend payment to shareholders is increased
 - B Funds are raised to finance an investment project
 - C Surplus assets are sold off
 - D Non-executive directors are appointed to the remuneration committee
- (2 marks)

11 Which of the following statements concerning profit are correct?

- 1 Accounting profit is not the same as economic profit
- 2 Profit takes account of risk
- 3 Accounting profit can be manipulated by managers

- A 1 and 3 only
- B 1 and 2 only
- C 2 and 3 only
- D 1, 2 and 3

(2 marks)

12 A company has annual credit sales of \$27 million and related cost of sales of \$15 million. The company has the following targets for the next year:

Trade receivables days	50 days
Inventory days	60 days
Trade payables	45 days

Assume there are 360 days in the year.

What is the net investment in working capital required for the next year?

- A \$8,125,000
- B \$4,375,000
- C \$2,875,000
- D \$6,375,000

(2 marks)

13 Which of the following statements is/are correct?

- 1 An increase in the cost of equity leads to a fall in share price
- 2 Investors faced with increased risk will expect increased return as compensation
- 3 The cost of debt is usually lower than the cost of preference shares

- A 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

(2 marks)

14 Governments have a number of economic targets as part of their fiscal policy.

Which of the following government actions relate predominantly to fiscal policy?

- 1 Decreasing interest rates in order to stimulate consumer spending
- 2 Reducing taxation while maintaining public spending
- 3 Using official foreign currency reserves to buy the domestic currency
- 4 Borrowing money from the capital markets and spending it on public works

- A 1 only
- B 1 and 3
- C 2 and 4 only
- D 2, 3 and 4

(2 marks)

- 15 The following are extracts from the statement of financial position of a company:

	\$'000	\$'000
Equity		
Ordinary shares	8,000	
Reserves	<u>20,000</u>	
		28,000
Non-current liabilities		
Bonds	4,000	
Bank loans	6,200	
Preference shares	<u>2,000</u>	
		12,200
Current liabilities		
Overdraft	1,000	
Trade payables	<u>1,500</u>	
		2,500
Total equity and liabilities		<u>42,700</u>

The ordinary shares have a nominal value of 50 cents per share and are trading at \$5.00 per share. The preference shares have a nominal value of \$1.00 per share and are trading at 80 cents per share. The bonds have a nominal value of \$100 and are trading at \$105 per bond.

What is the market value based gearing of the company, defined as prior charge capital/equity?

- A 15.0%
- B 13.0%
- C 11.8%
- D 7.3%

(2 marks)

(Total = 30 marks)

Section B – ALL 15 questions are compulsory and MUST be attempted

The following scenario relates to questions 16 – 20.

Plot Co sells Product P with sales occurring evenly throughout the year.

Product P

The annual demand for Product P is 300,000 units and an order for new inventory is placed each month. Each order costs \$267 to place. The cost of holding Product P in inventory is 10 cents per unit per year. Buffer inventory equal to 40% of one month's sales is maintained.

Other information

Plot Co finances working capital with short-term finance costing 5% per year. Assume that there are 365 days in each year.

16 **What is the total cost of the current ordering policy (to the nearest whole number)?**

- A \$2,250
- B \$2,517
- C \$3,204
- D \$5,454

(2 marks)

17 **What is the total cost of an ordering policy using the economic order quantity (EOQ) (to the nearest whole number)?**

- A \$3,001
- B \$5,004
- C \$28,302
- D \$40,025

(2 marks)

18 Plot Co is considering offering a 2% early settlement discount to its customers. Currently sales are \$10 million and customers take 60 days to pay. Plot Co estimates half the customers will take up the discount and pay cash. Plot is currently financing working capital using an overdraft on which it pays a 10% charge. Assume 365 days in a year.

What will be the effect of implementing the policy?

- A Benefit of \$17,808
- B Cost of \$17,808
- C Benefit of \$82,192
- D Benefit of \$182,192

(2 marks)

19 Plot Co managers are considering the cost of working capital management.

Are the following statements about working capital management true or false?

- 1 A conservative working capital finance approach is low risk but expensive
 - 2 Good working capital management adds to the wealth of shareholders
- A Statement 1 is true and statement 2 is false
 - B Statement 2 is true and statement 1 is false
 - C Both statements are true
 - D Both statements are false

(2 marks)

20 If Plot Co were overtrading, which TWO of the following could be symptoms?

- 1 Decreasing levels of trade receivables
- 2 Increasing levels of inventory
- 3 Increasing levels of long term borrowings
- 4 Increasing levels of current liabilities

- A 1 and 3
- B 1 and 4
- C 2 and 3
- D 2 and 4

(2 marks)

(Total = 10 marks)

The following scenario relates to questions 21 – 25.

GWW Co is a listed company which is seen as a potential target for acquisition by financial analysts. The value of the company has therefore been a matter of public debate in recent weeks and the following financial information is available:

Year	20Y2	20Y1	20Y0	20X9
Profit after tax (\$m)	10.1	9.7	8.9	8.5
Total dividends (\$m)	6.0	5.6	5.2	5.0

Statement of financial position information for 20Y2

	\$m	\$m
Non-current assets		91.0
Current assets		
Inventory	3.8	
Trade receivables	<u>4.5</u>	8.3
Total assets		<u>99.3</u>
Equity finance		
Ordinary shares	20.0	
Reserves	<u>47.2</u>	67.2
Non-current liabilities		
8% bonds		25.0
Current liabilities		<u>7.1</u>
Total liabilities		<u>99.3</u>

The shares of GWW Co have a nominal (par) value of 50c per share and a market value of \$4.00 per share. The business sector of GWW Co has an average price/earnings ratio of 17 times.

The expected net realisable values of the non-current assets and the inventory are \$86.0m and \$4.2m, respectively. In the event of liquidation, only 80% of the trade receivables are expected to be collectible.

21 What is the value of GWW Co using market capitalisation (equity market value)?

- A \$20m
- B \$40m
- C \$80m
- D \$160m

(2 marks)

22 What is the value of GWW Co using the net asset value (liquidation basis)?

- A \$58.9m
- B \$61.7m
- C \$62.6m
- D \$99.3m

(2 marks)

- 23 What is the value of GWW Co using the price/earnings ratio method (business sector average price/earnings ratio)?
- A \$1.7m
 B \$61.7m
 C \$160m
 D \$171.7m (2 marks)
- 24 An investor believes that they can make abnormal returns by studying past share price movements.
- In terms of capital market efficiency, to which of the following does the investor's belief relate?**
- A Fundamental analysis
 B Operational efficiency
 C Technical analysis
 D Semi-strong form efficiency (2 marks)
- 25 Assume that GWW Co's P/E ratio is 15. Its competitor's earnings yield is 6.25%.
- When comparing GWW Co to its competitor, which of the following is correct?**
- | | |
|-----------------------|------------------|
| Earnings yield of GWW | P/E ratio of GWW |
| A Higher | Higher |
| B Higher | Lower |
| C Lower | Higher |
| D Lower | Lower |
- (2 marks)

The following scenario relates to questions 26 – 30.

Edwen Co is a UK-based company which has the following expected transactions.

One month: Expected receipt of \$240,000
 One month: Expected payment of \$140,000
 Three months: Expected receipts of \$300,000

A one month forward rate of \$1.7832 per £1 has been offered by the company's bank and the spot rate is \$1.7822 per £1.

Other relevant financial information is as follows:

Short-term dollar borrowing rate 5.4% per year

Short-term sterling deposit rate 4.6% per year

Assume that it is now 1 April.

- 26 What are the expected sterling receipts in one month using a forward hedge (to the nearest whole number)?
- A £56,079
 B £56,110
 C £178,220
 D £178,330 (2 marks)
- 27 What are the expected sterling receipts in three months using a money market hedge (to the nearest whole number)?
- A £167,999
 B £296,004
 C £166,089
 D £164,201 (2 marks)

28 Edwen Co is expecting a fall in the UK/\$ exchange rate.

What is the impact of a fall in a country's exchange rate?

- 1 Exports will be given a stimulus
- 2 The rate of domestic inflation will rise
- A 1 only
- B 2 only
- C Both 1 and 2
- D Neither 1 nor 2

(2 marks)

29 Edwen Co is considering a currency futures contract.

Which of the following statements about currency futures contracts are true?

- 1 The contracts can be tailored to the user's exact requirements
- 2 The exact date of receipt or payment of the currency does not have to be known
- 3 Transaction costs are generally higher than other hedging methods

- A 1 and 2 only
- B 1 and 3 only
- C 2 only
- D 3 only

(2 marks)

30 **Do the following features apply to forward contracts or currency futures?**

- 1 Contract price is in any currency offered by the bank
- 2 Traded over the counter

- A Both features relate to forward contracts
- B Both features relate to currency futures
- C Feature 1 relates to forward contracts and feature 2 relates to currency futures
- D Feature 2 relates to forward contracts and feature 1 relates to currency futures

(2 marks)

Section C – BOTH questions are compulsory and MUST be attempted

31 Darn Co has undertaken market research at a cost of \$200,000 in order to forecast the future cash flows of an investment project with an expected life of four years, as follows:

Year	1 \$'000	2 \$'000	3 \$'000	4 \$'000
Sales revenue	1,250	2,570	6,890	4,530
Costs	500	1,000	2,500	1,750

These forecast cash flows are before taking account of general inflation of 4.7% per year. The capital cost of the investment project, payable at the start of the first year, will be \$2,000,000. The investment project will have zero scrap value at the end of the fourth year. The level of working capital investment at the start of each year is expected to be 10% of the sales revenue in that year.

Tax allowable depreciation would be available on the capital cost of the investment project on a 25% reducing balance basis. Darn Co pays tax on profits at an annual rate of 30% per year, with tax being paid one year in arrears. Darn Co has a nominal (money terms) after-tax cost of capital of 12% per year.

Required

- (a) Calculate the net present value of the investment project in nominal terms and comment on its financial acceptability. (10 marks)

- (b) Discuss the problems faced when undertaking investment appraisal in the following areas and comment on how these problems can be overcome:
- (i) assets with replacement cycles of different lengths;
 - (ii) an investment project has several internal rates of return; **(5 marks)**
- (c) 'Despite the theoretical limitations of the payback method of investment appraisal, it is the method most used in practice.'
- Discuss this statement briefly. **(5 marks)**

(Total = 20 marks)

- 32 Burse Co wishes to calculate its weighted average cost of capital and the following information relates to the company at the current time:

Number of ordinary shares	20 million
Book value of 7% convertible debt	\$29 million
Book value of 8% bank loan	\$2 million
Market price of ordinary shares	\$5.50 per share
Market value of convertible debt	\$107.11 per \$100 bond
Equity beta of Burse Co	1.2
Risk-free rate of return	4.7%
Equity risk premium	6.5%
Rate of taxation	30%

Burse Co expects share prices to rise in the future at an average rate of 6% per year. The convertible debt can be redeemed at par in eight years' time, or converted in six years' time into 15 shares of Burse Co per \$100 bond.

Required

- (a) Calculate the market value weighted average cost of capital of Burse Co. State clearly any assumptions that you make. **(13 marks)**
- (b) Discuss whether the dividend growth model or the capital asset pricing model offers the better estimate of the cost of equity of a company. **(7 marks)**

(Total = 20 marks)

Answers

**DO NOT TURN THIS PAGE UNTIL YOU HAVE
COMPLETED THE MOCK EXAM**

A PLAN OF ATTACK

Managing your nerves

As you turn the pages to start this mock exam a number of thoughts are likely to cross your mind. At best, examinations cause anxiety so it is important to stay focused on your task for the next three hours! Developing an awareness of what is going on emotionally within you may help you manage your nerves. Remember, you are unlikely to banish the flow of adrenaline, but the key is to harness it to help you work steadily and quickly through your answers.

Working through this mock exam will help you develop the exam stamina you will need to keep going for three hours and 15 minutes.

Managing your time

Planning and time management are two of the key skills which complement the technical knowledge you need to succeed. To keep yourself on time, do not be afraid to jot down your target completion times for each question, perhaps next to the title of the question on the paper. As all the questions are **compulsory**, you do not have to spend time wondering which question to answer!

Doing the exam

Actually doing the exam is a personal experience. There is not a single **right way**. As long as you submit complete answers to all questions after the three hours are up, then your approach obviously works.

Looking through the paper

Section A has 15 MCQs. This is the section of the paper where the examiner can test knowledge across the breadth of the syllabus. Make sure you read these questions carefully. The distractors are designed to present plausible, but incorrect, answers. Don't let them mislead you. If you really have no idea – guess. You may even be right.

Section B has three questions, each with a scenario and five objective test questions.

Section C has two longer questions:

- Question 31 requires you to calculate NPV, with inflation. Don't get swamped by inflation – show clear workings and lay your thinking on the page like a road map for the marker.
- Question 32 looks at the cost of debt of a convertible bond as part of the calculation of WACC. Part (b) requires a discussion on whether the dividend growth model or the CAPM offers the better estimate of cost of equity.

Allocating your time

BPP's advice is to always allocate your time **according to the marks for the question**. However, **use common sense**. If you're doing a question but haven't a clue how to do part (b), you might be better off re-allocating your time and getting more marks on another question, where you can add something you didn't have time for earlier on. Make sure you leave time to recheck the MCQs and make sure you have answered them all.

Section A

1 A Shareholder return = $\frac{P_1 - P_0 + D_1}{P_0}$

$$\therefore 0.197 = \frac{P_1 - 3.10 + 0.21}{3.10}$$

$$\therefore 0.6107 = P_1 - 3.10 + 0.21$$

$$\therefore P_1 = 3.5007$$

Syllabus area A3d

- 2 B Statement 1 is true.

Statement 2 is false. The reverse yield gap refers to yields on shares being lower than on low-risk debt. A reverse yield gap can occur because shareholders may be willing to accept lower returns on their investments in the short-term, in anticipation that they will make capital gains in the future.

Statement 3 is true. Disintermediation means borrowers dealing with lenders directly and has led to a reduction in the role of financial intermediaries.

Syllabus area B2b

- 3 C Statement 1 is false. Maximising market share is not a financial objective.

Statement 2 is true. The primary financial objective of any profit-making company is to maximise shareholder wealth.

Statement 3 is true. Financial objectives should be quantifiable. These include, for example, target values for earnings per share, dividend per share and gearing which are all quantifiable measures.

Syllabus area A2b

- 4 A The borrowing interest rate for 6 months is $8\% / 2 = 4\%$.

The company should borrow $500,000 \text{ pesos} / 1.04 = 480,769$ today. After six months, 500,000 pesos will be repayable, including interest.

These pesos will be converted to \$ at $480,769 / 15 = \$32,051$. The company must deposit this amount for 6 months, when it will have increased in value with interest.

$\$32,051 \times (1 + (0.03/2)) = \$32,532$ or \$32,500 to the nearest \$100.

Syllabus area G3a

- 5 B Statement A is false. A bonus issue is when a company offers free additional shares to existing shareholders. Therefore, it does not raise new equity finance.

Statement B is true. By reducing the number of shares in issue, the company can increase the EPS. This allows debt to be substituted for equity so gearing is raised.

Statement C is false. M&M proposed that in a perfect capital market, shareholders are indifferent between dividends and capital gains and the value of a company is determined solely by the earning power of its assets and investments. This is known as the irrelevancy theory of dividend policy

Statement D is false. Shareholders are entitled to receive a share of any agreed dividends but directors decide on the amount and frequency of dividend payments (if any).

Syllabus area E1e

- 6 C Statement A is incorrect. With buying an asset, the company receives tax allowances (tax-allowable depreciation) which results in cash savings on tax. With leasing, the lessor does not receive these allowances. However, the lease rental is allowable for tax purposes which results in cash savings on tax.

Statement B is incorrect. They need to be discounted at the cost of capital, not just the cost of debt.

Statement C is correct. Ranking using the profitability index can be used if projects are divisible.

Statement D is incorrect. Soft capital rationing is brought about by internal factors and decisions by management, not external government decisions.

Syllabus area D4c

	<i>Total cash flow</i>	<i>Joint probability</i>	<i>EV of cash flow</i>
	\$		\$
36,000	0.1125	4,050	
14,000	0.0375	525	
32,000	0.4500	14,400	
10,000	0.15000	1,500	
16,000	0.1875	3,000	
(6,000)	0.0625	(375)	
		23,100	
Less initial investment		(12,000)	
EV of the NPV		<u>11,100</u>	

Syllabus area D3c

- 8 A The cost of debt is the IRR and therefore gives an NPV of zero.

$$\therefore \text{current MV} + [7 \times \text{AF}_{1,7} \times 9\%] + [105 \times \text{DF}_7 \times 9\%] = 0$$

$$\therefore \text{current MV} + [7 \times 5.033] + [105 \times 0.547] = 0$$

$$\therefore \text{current MV} = \$92.67$$

Syllabus area E2b

- 9 D Statement 1 is correct. If a business is profitable then an increase in sales should translate to more working capital.

Statement 2 is correct. The greater the cash operating cycle, the greater the working capital investment need is. Greater working capital means more cash tied up and therefore not earning profit.

Statement 3 is correct. Overtrading (or undercapitalisation) is where a business is over reliant on short-term finance to support its operations. It is trying to do too much too quickly with little long-term capital.

Syllabus area C1b/c

- 10 D Financial management decisions cover investment decisions, financing decisions (options B and C) and dividend decisions (option A).

Syllabus area A1a

- 11 A Statement 1 is true. The economists concept of profits is broadly in terms of cash, whereas accounting profits may not equate to cash flows.

Statement 2 is false. Profit does not take account of risk.

Statement 3 is true. Accounting profit can be manipulated to some extent by choices of accounting policies.

Syllabus area A2b

12 B $\text{Inventory} = 15,000,000 \times \frac{60}{360} = \$2,500,000$

$$\text{Trade receivables} = 27,000,000 \times \frac{50}{360} = \$3,750,000$$

$$\text{Trade payables} = 15,000,000 \times \frac{45}{360} = \$1,875,000$$

$$\text{Net investment required} = 2,500,000 + 3,750,000 - 1,875,000 = \$4,375,000$$

Syllabus area C3a

- 13 D** Statement 1 is correct. An increase in the cost of equity will lead to a fall in share price. Think about the dividend valuation model and how P_0 will be affected if K_e increases.

Statement 2 is correct. This is known as the risk-return trade off.

Statement 3 is correct. Preference shares are riskier than debt and therefore a more expensive form of finance.

Syllabus area E3a/b

- 14 C** Fiscal policy is action by the government to spend money, or to collect money in taxes with the purpose of influencing the condition of the national economy.

Statement 1 is incorrect. Decreasing interest rates relates to monetary policy.

Statement 2 is correct. Reducing taxation relates to fiscal policy.

Statement 3 is incorrect. This is government policy on intervention to influence the exchange rate.

Statement 4 is correct. Spending money on public works is an example of fiscal policy.

Syllabus area B1b/c

15 A Gearing =
$$\frac{\text{Prior charge capital}}{\text{Equity}}$$

Market value of preference shares = 2,000 shares \times 80c = \$1,600.

Prior charge capital = preference shares + bonds + loan.

$$\begin{aligned}\therefore \text{Prior charge capital} &= \$1,600 + (\$4,000 \times 1.05) + \$6,200 \\ &= \$12,000\end{aligned}$$

Market value of equity:

Number of shares = \$8,000 \div 50c = 16,000 shares

16,000 shares \times \$5 = \$80,000

$$\text{Gearing} = \frac{\$12,000}{\$80,000} \times 100\% = 15.0\%$$

Syllabus area E3d

Section B

16 D \$5,454 per year

Cost of current ordering policy

Total cost = order costs + holding costs

Ordering cost = $12 \times \$267 = \$3,204$ per year Note: One order per month

Monthly order = monthly demand = $300,000/12 = 25,000$ units

Buffer inventory = $25,000 \times 0.4 = 10,000$ units

Average inventory excluding buffer inventory = $25,000/2 = 12,500$ units

Average inventory including buffer inventory = $12,500 + 10,000 = 22,500$ units

Holding cost = $22,500 \times 0.1 = \$2,250$ per year

Total cost = $\$3,204 + \$2,250 = \$5,454$ per year

17 B \$5,004 per year

Cost of ordering policy using economic order quantity (EOQ)

EOQ = $\sqrt{(2 \times C_o \times D)/C_h}$

EOQ = $\sqrt{(2 \times 267 \times 300,000)/0.10} = 40,025$ per order

Number of orders per year = $300,000/40,025 = 7.5$ orders per year

Order cost = $7.5 \times 267 = \$2,003$

Average inventory excluding buffer inventory = $40,025/2 = 20,013$ units

Average inventory including buffer inventory = $20,013 + 10,000 = 30,013$ units

Holding cost = $30,013 \times 0.1 = \$3,001$ per year

Total cost = $\$2,003 + \$3,001 = \$5,004$ per year

18 B Current receivables = $\$10 \text{ million} \times (60 / 365) = \$1,643,835$.

Overdraft interest charge per annum relating to current receivables = $\$1,643,835 \times 10\% = \$164,383.50$ pa

Interest saved when half customers pay cash = $0.5 \times \$164,383.50 = \$82,191.75$ per year

Annual cost of the discount = $0.5 \times \$10 \text{ million} \times 2\% = \$100,000$.

Net cost of offering the early settlement discount = $\$100,000 - \$82,191.75 = \$17,808.25$ cost per year

19 C Both statements are true.

In terms of working capital finance, organisations can have a conservative (mainly long-term finance) or aggressive (mainly short-term finance) approach. The former is likely to be low risk but expensive, the latter more risky but cheaper (as short-term finance is low risk from an investor's perspective.)

Poor financial management of working capital can lead to cash flow difficulties or even the failure of a business. Good working capital management can also create profits and minimise costs, and this ultimately adds to the wealth of shareholders – a key objective in the vast majority of businesses.

20 D The two symptoms of overtrading are increasing levels of inventory and current liabilities. Trade receivables increase during overtrading so statement 1 is not a symptom. Most of the increase in assets is financed by credit rather than long term borrowings so statement 3 is not a symptom.

21 D \$160m

Market capitalisation = number of shares \times market value.

$$= (\$20m / \$0.5) \times \$4.00 = \$160m$$

- 22 **B** The net realisable value of assets at liquidation = non-current assets + inventory + trade receivables – current liabilities – bonds
 $= \$86m + \$4.2m + (\$4.5m \times 80\%) - \$7.1m - \$25m$
 $= \$61.7m$
- 23 **D** \$171.7m
- Historic earnings based on 20X2 profit after tax = \$10.1m
Average P/E ratio in industry = 17 times
Assuming no adjustment required to P/E ratio (GWW is a listed company so no need to adjust for transferability) and using historic earnings:
P/E ratio value = $17 \times \$10.1m = \$171.7m$
- 24 **C** Technical analysis. Technical analysts work on the basis that past price patterns will be repeated, so that future price movements can be predicted from historical patterns.
- 25 **B** For GWW Co, P/E = 15, Earnings yield ($= 1/(P/E \text{ ratio})$) = 6.7%.
For competitor, P/E ($= 1/\text{earnings yield}$) = 16, Earnings yield = 6.25%.
- 26 **A** £56,079
- Forward market**
Net receipt in one month = $\$(240,000 - 140,000) = \$100,000$
Edwen Co needs to sell \$s at an exchange rate of \$1.7832 = £1
Sterling value of net receipt = $\$100,000 / 1.7832 = £56,079$
- 27 **A** £167,999
- Money market hedge**
Expected receipt after three months = \$300,000
\$ interest rate over three months = $5.4/4 = 1.35\%$
\$s to borrow now in order to have \$300,000 liability after three months = $\$300,000 / 1.0135 = \$296,004$
Spot rate for selling \$s = \$1.7822 per £1
Sterling deposit from borrowed \$s at spot = $\$296,004 / 1.7822 = £166,089$
Sterling interest rate over three months = $4.6/4 = 1.15\%$
Value in three months of sterling deposit = $£166,089 \times 1.0115 = £167,999$
- 28 **C** With a fall in a country's exchange rate (for example if the £/\$ exchange rate falls from £0.7: \$1 to £0.8: \$1) Edwen's UK exports will be cheaper (and so be more competitive) and imports will become more expensive. Given imports may include raw materials, this pushes local prices up – inflation.
- 29 **C** 'The contracts can be tailored to the user's exact requirements' is false. Futures contracts are standard contracts.
'The exact date of receipt or payment of the currency does not have to be known' is true. The futures contract does not have to be closed out until the actual cash receipt or payment is made.
'Transaction costs are generally higher than other hedging methods' is false. Transaction costs are usually lower than other hedging methods.
- 30 **A** 'Contract price is in any currency offered by the bank' relates to forward contracts. 'Traded over the counter' also relates to forward contracts.

Section C

Question 31

Text reference. Net present value calculations with inflation are covered in Chapters 8 and 9.

Top tips. Watch your time carefully on part (a). Start with the easy numbers and work your way up to the harder numbers always keeping an eye on the clock. Don't let the inflation aspect of this calculation drag you down.

Easy marks. Don't forget to conclude in part (a), it's the easiest mark in the question! Part (b) is a fairly straightforward discussion on limitations of investment appraisal in certain circumstances and approaches that can solve these problems.

Marking scheme

	Marks
(a) Inflated sales revenue	1
Inflated costs	1
Tax liability	1
Tax allowable depreciation, years 1 to 3	1
Balancing allowance, year 4	0.5
Tax allowable depreciation tax benefits	1
Timing of tax liabilities and benefits	1
Incremental working capital investment	1
Recovery of working capital	0.5
Market research omitted as sunk cost	0.5
Calculation of nominal terms NPV	1
Comment on financial acceptability	0.5
	10
(b) Discussion of asset replacement decisions	2-3
Discussion of projects with several IRRs	2-3
	5
(c) 1-2 marks per point	Maximum
	5 20

- (a) As the requirement states calculations are to be performed in nominal terms, cash flows need to be stated in their future amounts (ie inflated if necessary) and discounted at the nominal rate – the nominal rate also includes inflation.

	0	1	2	3	4	5
Net cash inflow before corporation tax (working 1)	785.25	1,721.05	5,038.54	3,340.65		
Tax in net cash inflow @ 30% 1 year in arrears		(235.58)	(516.32)	(1,511.56)	(1,002.20)	
Benefit of tax allowable depn (working 2)		150	112.5	84.38	253.13	
Investment	(2,000)					
Working capital (working 3)	(130.88)	(150.85)*	(509.06)	246.43	544.36	
Net cash flow	(2,130.88)	634.40	1,126.41	4,881.15	2,457.83	(749.07)
12% Discount factor	1	0.893	0.797	0.712	0.636	0.567
Present value	<u>(2,130.88)</u>	<u>566.52</u>	<u>897.75</u>	<u>3,475.38</u>	<u>1,563.18</u>	<u>(424.72)</u>

$$\text{Net present value} = \sum \text{Present values} = 3,947.23$$

A positive NPV of \$3,947,230 makes the project financially acceptable, as accepting it should increase shareholder wealth.

Workings

1 Inflated net cash inflows

	1	2	3	4
Sales revenue	1,250	2,570	6,890	4,530
Less Costs	(500)	(1,000)	(2,500)	(1,750)
Net cash inflow in real terms	750	1,570	4,390	2,780
Inflation factor	$\times 1.047$	$\times (1.047)^2$	$\times (1.047)^3$	$\times (1.047)^4$
Net cash flow in nominal terms	<u>785.25</u>	<u>1,721.05</u>	<u>5,038.54</u>	<u>3,340.65</u>

2 Tax allowable depreciation

		Tax saved @30%	Timing
Initial cost	2,000		
1 st year TAD 25%	(500)	150	T ₁
TWDV end year 1	1,500		
2 nd year TAD 25%	(375)	112.5	T ₂
TWDV end year 2	1,125		
3 rd year TAD 25%	(281.25)	84.38	T ₃
TWDV end year 3	843.75		
Disposal	(0)		
Balancing allowance	<u>843.75</u>	253.13	T ₄

3 Working capital

	0	1	2	3	4
Sales revenue (real terms)		1,250	2,570	6,890	4,530
Inflation factor		$\times 1.047$	$\times (1.047)^2$	$\times (1.047)^3$	$\times (1.047)^4$
Sales revenue (nominal terms)		1,308.75	2,817.26	7,907.87	5,443.58
Working capital (10%)		130.88	281.73	790.79	544.36
Increments (= cash flow) in place at start of year	(130.88)	(150.85)*	(509.06)	246.43	544.36

*for example, 281.73 – 130.88 = 150.85

- (b) (i) The NPV method does not assess when or how frequently an asset should be replaced. The annual equivalent cost method addresses this issue. The annual equivalent cost is the present value of cost over one replacement cycle divided by the cumulative present value factor for the number of years in the cycle. The optimum replacement period is the period with the lowest equivalent annual cost.
- (ii) Investment projects with non-conventional cash flows can have more than one internal rate of return. Decision makers need to be aware of this to avoid making the wrong decision. The use of NPV can remove this issue as the NPV method deals with non-conventional cash flows. This is a reason why NPV is considered to be superior to the IRR method.

(c) Payback

The payback method of project appraisal involves calculating the period of time that it is likely to take to recoup the initial outlay on a project, and then comparing this with what the company defines as an acceptable period. If the payment period is within that defined as acceptable, and provided that there are no other constraints (for example, capital rationing), the project will be accepted.

Limitations of payback

- (i) It ignores the timing of cash flows within the payback period, the cash flows at the payback period and therefore the total project return.
- (ii) It ignores the time value of money.
- (iii) It is unable to distinguish between projects with the same payback period.
- (iv) It tends to favour short term (often smaller) projects over longer term projects.
- (v) It takes account of the risk of the timing of cash flows but not the variability of those cash flows.

Popularity of payback

- (i) It is **simple to calculate** and **simple to understand**, and this may be important when management resources are limited. It is similarly helpful in communicating information about minimum requirements to managers responsible for submitting projects.
- (ii) It **can be used** as a **screening device** as a first stage in eliminating obviously inappropriate projects prior to more detailed evaluation.
- (iii) The fact that it tends to **bias in favour of short term projects** means that it tends to minimise both financial and business risk.
- (iv) It can be used when there is a **capital rationing situation** to identify those projects which generate additional cash for investment quickly.

Question 32

Text references. Cost of capital is covered in Chapter 15.

Top tips. This question looks at the cost of debt of a convertible bond as part of the calculation of WACC. In part (a), the cost of equity has to be calculated using the capital asset pricing model (CAPM) as there is insufficient data in the question to use the dividend growth model. The risk-free rate of return, the equity beta and the equity risk premium (this is the difference between the market return and the risk-free return) are given, and so the cost of equity can be calculated from the CAPM formula. For the convertible debt calculation you need to assume that conversion is likely to occur, and then calculate the cost of debt using the current market value, the after-tax interest rate, the conversion value after six years and use the IRR method.

If you understand the formula for the dividend growth model, part (b) should be a straightforward explanation of the uncertainties behind each variable in the formula. You can take a similar approach with the capital asset pricing model.

Easy marks. Each part of the calculations in part (a) will gain marks so, if you get stuck, make an assumption and move on. Don't spend too long on this part of the question as there are easier marks available in part (b).

Examiner's comments. Answers to part (a) of the question were of variable quality. A common error was to confuse the equity risk premium with the return on the market, resulting in a cost of equity less than the cost of debt. Such a result is inconsistent with the risk-return hierarchy.

Many candidates ignored the bank loan, or assumed that it was not relevant, and lost credit as a result.

Finding the cost of debt of the convertible bonds proved to be a challenge for many candidates. Some candidates stated simply that they assumed the bonds were to be redeemed rather than converted and lost marks as a result, even if they calculated correctly the cost of debt of the bond with redemption after eight years. Students gained credit for any parts of this evaluation that were carried out correctly.

Many candidates were able to calculate market weights correctly, although some chose to ignore the current bond market price and calculate a market price based on the present value of the conversion value. Credit was given where method was correct but calculation errors were made.

In part (b) weaker answers simply outlined the two models and their constituent variables. Better answers compared and contrasted the two models, and argued for the superiority of the CAPM.

	Marks
(a) Calculation of cost of equity	2
Calculation of cost of convertible debt	5
Calculation of cost of bank loan	2
Calculation of market values	2
Calculation of WACC	2
	<u>13</u>
(b) Discussion of dividend growth model	2-3
Discussion of capital asset pricing model	2-3
Conclusion	1-2
Maximum	Maximum <u>7</u>
	<u>20</u>

(a) Cost of equity

The required rate of return on equity can be found using the capital asset pricing model:

$$\begin{aligned} E(r_i) &= R_f + \beta_i (E(r_m) - R_f) \\ E(r_i) &= 4.7\% + (1.2 \times 6.5\%) \\ &= 12.5\% \end{aligned}$$

Cost of convertible debt

$$\text{Conversion value} = P_0 (1 + g)^n R$$

Where P_0 is the current share price

g is the expected annual growth of the share price

n is the number of years to conversion

R is the number of shares received on conversion

$$\text{Conversion value} = \$5.50 \times (1 + 0.06)^6 \times 15$$

$$= \$117.03 \text{ per bond}$$

We can therefore assume that **conversion will take place** as the conversion value is much greater than par value.

The **annual interest cost** net of tax will be $7\% \times (1 - 0.3) = \$4.90$ per bond

The cash flows will be as follows:

Year	Cash flow	10% discount		5% discount	
		\$m	factors	\$m	factors
0	Market value	(107.11)	1.000	(107.11)	1.000
1-6	Interest	4.90	4.355	21.34	5.076
6	Conversion value	117.03	0.564	66.00	0.746
				<u>(19.77)</u>	<u>5.06</u>

Calculate the cost of convertible debt using an IRR calculation.

$$\begin{aligned} \text{IRR} &= a\% + \left[\frac{\text{NPV}_a}{\text{NPV}_a - \text{NPV}_b} \times (b - a) \right]\% \\ &= 5\% + \frac{5.06(10\% - 5\%)}{5.06 + 19.77} = 6.02\% \end{aligned}$$

The **after tax cost of convertible debt** is therefore **6.02%**

Cost of bank loan

$$\begin{aligned}\text{After-tax interest rate} &= 8\% \times (1 - 0.3) \\ &= 5.6\%\end{aligned}$$

Market values

Market value of equity = $20m \times \$5.50 = \$110m$

Market value of convertible debt = $29m \times 107.11/100 = \$31.06m$

Market value of bank loan = \$2m

Total market value = $\$(110.00 + 31.06 + 2)m = \$143.06m$

Weighted average cost of capital

$$WACC = \left(\frac{V_E}{V_E + V_D} \right) k_e + \left(\frac{V_D}{V_E + V_D} \right) k_d$$

In this case, we have two costs of debt so:

$$\begin{aligned}WACC &= \left(\frac{110}{143.06} \right) \times 12.5\% + \left(\frac{31.06}{143.06} \right) \times 6.02\% + \left(\frac{2}{143.06} \right) \times 5.6\% \\ &= 9.61\% + 1.31\% + 0.08\% \\ &= 11\%\end{aligned}$$

(b) **Dividend growth model**

There are a number of problems with the dividend growth model. It uses a set figure for g which assumes that **dividends grow smoothly**. In reality, dividends change according to decisions made by managers who do not necessarily repeat historical trends. It is therefore very difficult to accurately predict the future dividend growth rate.

The other main problem is how to incorporate **risk**. The dividend growth model does not explicitly consider risk, particularly **business risk**. The company may change its area of business operations and the economic environment is notoriously uncertain. The **share price** will however fall as risk increases, leading to an increased cost of equity.

The model also ignores the effects of **taxation** and assumes there are **no issue costs** for new shares.

Capital asset pricing model

The main advantage that the CAPM has over the dividend valuation model is that it does **explicitly consider risk**. The CAPM is based on a comparison of the **systematic risk** of individual investments with the risks of all shares in the market. Systematic risk is risk that cannot be diversified away and an investor will require a **higher return** to compensate for higher risk. This higher return is the higher cost of equity that is calculated using the CAPM formula.

The formula does however require **estimates** to be made of **excess return**, the **risk-free rate** and **beta values**. All of these can be difficult to estimate, but are more reliable than the dividend growth rate used in the dividend valuation model.

Conclusion

The CAPM does explicitly consider risk and uses estimated values that are more reliable than those used in the dividend valuation model. It can therefore be said that CAPM offers the better estimate of the cost of equity of a company.

ACCA

Paper F9

Financial Management

Mock Examination 2

Question Paper

Time allowed: 3 hours 15 minutes

ALL questions are compulsory and MUST be attempted

**DO NOT OPEN THIS PAPER UNTIL YOU ARE READY TO START UNDER
EXAMINATION CONDITIONS**

Section A – ALL 15 questions are compulsory and MUST be attempted

- 1 A school changes its stationery suppliers to save money, and increases class sizes. As a result the latest set of exam results are lower than previous years.

How has the school performed in terms of the value for money framework?

- Well on economy and efficiency, but at the cost of effectiveness
- Well on efficiency, but not well with economy or effectiveness
- Well on efficiency and elasticity, badly on effectiveness
- Well on effectiveness and economy, but badly on efficiency.

(2 marks)

- 2 The government in a country is following an expansionary fiscal policy.

How might this affect many businesses?

- Higher taxes, less government contracts being offered, less subsidies, lower demand.
- Lower interest rates, increased availability of credit from banks, higher demand.
- Lower taxes, increased government subsidies and contracts being offered, higher demand.
- Higher interest rates, less availability of credit from banks, lower demand.

(2 marks)

- 3 **What does 'primary market' refer to?**

- The biggest stock market in an economy
- The market for new finance being obtained by businesses
- The market for trading existing financial instruments
- The most senior market in an economy.

(2 marks)

- 4 TKQ Co has just paid a dividend of 21c per share and its share price is \$3.50 per share. One year ago its share price was \$3.10 per share.

Working to one decimal place, what is the total shareholder return over the period (to 1 dp)?

%

(2 marks)

- 5 TW Co needs to purchase raw supplies of 2,000 kgs of material M each year. There is a standing charge of \$10 per order. Purchase price is \$5 per kg, and it costs TW 10% of purchase price to store one unit for a year.

What is the annual inventory related cost at the economic order quantity to the nearest \$10?

\$

(2 marks)

- 6 **Which THREE of the following money market instruments would be classed as 'discount' instruments as opposed to 'interest bearing'?**

- Commercial paper
- Treasury bills
- Certificate of deposit
- Bankers acceptance

(2 marks)

7 The following information is relevant to ABC Co:

Receivables days: 56 days

Inventory turnover: 10 times

Payables days: 45 days

Days per year: 360 days

ABC implements an inventory holding policy that reduces inventory days by 6.

What is the new length of the working capital cycle?

days

(2 marks)

8 QWE Co is appraising a new 5-year project that will generate net cash inflows of \$50,000 for an initial investment in machinery of \$250,000. The machinery has an estimated written down value and scrap value of \$100,000 at the end of five years.

What is the return on capital employed (ROCE) for the project (using the average investment method)? Give your answer to 1 dp.

%

(2 marks)

9 A project requires an initial outlay of \$100,000 and will generate net cash inflows of \$40,000 per annum.

At a cost of capital of 10%, what is the adjusted payback period to the nearest month?

2 years 6 months

3 years

2 years 10 months

3 years 2 months

(2 marks)

10 ACB Co is appraising a project with an initial investment of \$1 million that will generate net cash inflows after tax of \$150,000 per annum indefinitely. ACB Co estimates its cost of capital to be 12%.

What is ACB's percentage sensitivity to their estimate of a 12% cost of capital?

3%

15%

25%

20%

(2 marks)

11 **Are the following statements about capital rationing true or false?**

True False

A capital expenditure budget is evidence of a soft capital constraint.

Whether projects are divisible or indivisible, the investment plan should seek to maximise net present value per \$ invested.

(2 marks)

12 **Which of the following is NOT an advantage of withholding a dividend as a source of finance?**

Retained profits are a free source of finance

Investment plans need less justification

Issue costs are lower

It is quick

(2 marks)

- 13 A company has just paid an ordinary share dividend of 32.0 cents and is expected to pay a dividend of 33.6 cents in one year's time. The company has a cost of equity of 13%.

What is the market price of the company's shares to the nearest cent on an ex dividend basis?

- \$3.20
- \$4.41
- \$2.59
- \$4.20

(2 marks)

- 14 Company A's shares have a higher beta factor than company B's.

Which of the following is true about company A?

- Total risk is higher than company B
- It is exposed to more systematic risk factors than company B
- Its shares are under priced
- It is exposed to higher levels of systematic risk than company B

(2 marks)

- 15 **Which of the following is LEAST directly relevant to the discounted cash flow valuation of a business?**

- Forecast synergies
- Realisable value of operating assets
- Cost of equity to appraise the investment
- Value of surplus assets

(2 marks)

(Total = 30 marks)

Section B – ALL 15 questions are compulsory and MUST be attempted

The following scenario relates to questions 16-20.

Guilder Co is appraising four different projects but is experiencing capital rationing in Year 0. No capital rationing is expected in future periods but none of the four projects that Guilder Co is considering can be postponed, so a decision must be made now. Guilder Co's cost of capital is 12%.

The following information is available.

Project	Outlay in Year 0	PV	NPV
Amster	100,000	111,400	11,400
Eind	56,000	62,580	6,580
Utrec	60,000	68,760	8,760
Tilbur	90,000	102,400	12,400

16 If the projects are ranked in terms of profitability index (PI), which order is correct?

- Tilbur, Amster, Utrec, Eind
- Amster, Tilbur, Utrec, Eind
- Amster, Eind, Tilbur, Utrec
- Utrec, Tilbur, Eind, Amster

(2 marks)

17 Which of the following statements about Guilder Co's decision to use PI is true?

- The PI takes account of the absolute size of the individual projects
- PI highlights the projects which are slowest in generating returns
- PI can only be used if projects are divisible
- PI allows for uncertainty about the outcome of each project

(2 marks)

18 Several years later, there is no capital rationing and Guilder Co decides to replace an existing machine. Guilder Co has the choice of either a Super machine (lasting 4 years) or a Great machine (lasting 3 years).

The following present value table includes the figures for a Super machine.

	0	1	2	3	4
Maintenance costs					
Investment and scrap	<u>(250,000)</u>	<u> </u>	<u> </u>	<u> </u>	<u>25,000</u>
Net cash flow	(250,000)	(20,000)	(29,000)	(32,000)	10,000
Discount at 12%	<u>1.000</u>	<u>0.893</u>	<u>0.797</u>	<u>0.712</u>	<u>0.636</u>
Present values	<u>(250,000)</u>	<u>(17,860)</u>	<u>(23,113)</u>	<u>(22,784)</u>	<u>(6,360)</u>

Tax and tax allowable depreciation should be ignored.

What is the equivalent annual cost (EAC) of the Super machine (to the nearest whole number)?

\$

(2 marks)

19 Which of the following statements concerning Guilder Co's use of the EAC are true?

- (1) The use of equivalent annual cost is appropriate in periods of high inflation
 - (2) The EAC method assumes that the machine can be replaced by exactly the same machine in perpetuity
- Both statements are true
 Both statements are false
 Statement 1 is true and statement 2 is false
 Statement 1 is false and statement 2 is true

(2 marks)

20 The following potential cash flows are predicted for maintenance costs for the Great machine:

Year	Cash flow (\$)	Probability
2	19,000	0.55
2	26,000	0.45
3	21,000	0.3
3	25,000	0.25
3	31,000	0.45

What is the expected present value of the maintenance costs for year 2 (to the nearest whole number)?

\$

(2 marks)

The following scenario relates to questions 21-25.

TGA Co's sales are exported to a European country and are invoiced in euros.

TGA Co expects to receive €500,000 from export sales at the end of three months. A forward rate of €1.687 per \$1 has been offered by the company's bank and the spot rate is €1.675 per \$1.

Other relevant financial information is as follows:

Short-term dollar borrowing rate 5% per year

Short-term dollar deposit rate 4% per year

TGA Co can borrow short term in the euro at 9% per year

Assume there are 365 days in each year.

21 What could TGA Co do to reduce the risk of the euro value dropping relative to the dollar before the €500,000 is received?

- 1 Deposit €500,000 immediately
- 2 Enter into a forward contract to sell €500,000 in three months
- 3 Enter into an interest rate swap for three months

1 or 2 only
 2 only
 3 only
 1, 2 or 3

(2 marks)

22 What is the dollar value of a forward market hedge (to the nearest whole number)?

\$

(2 marks)

23 **What is the dollar value of a money market hedge?**

- \$284,814
- \$292,761
- \$294,858
- \$297,770

(2 marks)

24 TGA Co is considering futures contracts.

Which of the following statements are true of futures contracts?

	True	False
Transactions costs are lower than other hedging methods	<input type="checkbox"/>	<input type="checkbox"/>
They can be tailored to TGA Co's exact requirements	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

25 The following statements refer to types of foreign currency risk.

- 1 The risk that TGA Co will make exchange losses when the accounting results of its foreign branches are expressed in the home currency
- 2 The risk that exchange rate movements will affect the international competitiveness of TGA Co

What types of risk do the statements refer to?

	Economic	Translation	Transaction
Statement 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statement 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

The following scenario relates to questions 26-30.

DFE Co is hoping to invest in a new project. DFE Co's gearing is slightly above the industry average, so when seeking finance for the new project DFE Co opts for equity finance.

The board of DFE Co recently appointed a Media Liaison officer as they believe the timing and method of public announcements (such as the investment in a large project) is important in managing the value of DFE's shares.

DFE Co has 8% convertible loan notes in issue which are redeemable in five years' time at their nominal value of \$100 per loan note. Alternatively, each loan note could be converted after five years into 70 equity shares with a nominal value of \$1 each.

The equity shares of DFE Co are currently trading at \$1.25 per share and this share price is expected to grow by 4% per year. The before-tax cost of debt of DFE Co is 10% and the after-tax cost of debt of DFE Co is 7%.

26 **What is the capital structure theory that DFE Co appears to subscribe to?**

- A Traditional view
- B Modigliani-Miller (no tax)
- C Modigliani-Miller (with tax)
- D Residual view

(2 marks)

27 **How efficient does the DFE Co board believe the markets to be?**

- A Completely inefficient
- B Weak form efficient
- C Semi-strong form efficient
- D Strong form efficient

(2 marks)

28 **What is the current market value of each convertible loan note (to 2 dp)?**

\$

(2 marks)

29 In relation to DFE Co hedging interest rate risk, which of the following statements is correct?

- The flexible nature of interest rate futures means that they can always be matched with a specific interest rate exposure
- Interest rate options carry an obligation to the holder to complete the contract at maturity
- Forward rate agreements are the interest rate equivalent of forward exchange contracts
- Matching is where a balance is maintained between fixed rate and floating rate debt **(2 marks)**

30 Which of the following could cause the interest yield curve to steepen?

- 1 Increased uncertainty about the future
- 2 Heightened expectations of an increase in interest rates
- 3 The expectation that interest rate decreases will happen earlier than previously thought.

- 1 and 2 only
- 1,2 and 3
- 2 and 3 only
- 1 only **(2 marks)**

(Total = 30 marks)

Section C – BOTH questions are compulsory and MUST be attempted

- 31 Dartig Co is a stock-market listed company that manufactures consumer products and it is planning to expand its existing business. The investment cost of \$5 million will be met by a 1 for 4 rights issue. The current share price of Dartig Co is \$2.50 per share and the rights issue price will be at a 20% discount to this. The finance director of Dartig Co expects that the expansion of existing business will allow the average growth rate of earnings per share over the last four years to be maintained into the foreseeable future.

The earnings per share and dividends paid by Dartig over the last four years are as follows:

	20X3	20X4	20X5	20X6	20X7
Earnings per share (cents)	27.7	29.0	29.0	30.2	32.4
Dividend per share (cents)	12.8	13.5	13.5	14.5	15.0

Dartig Co has a cost of equity of 10%. The price/earnings ratio of Dartig Co has been approximately constant in recent years. Ignore issue costs.

Required

- (a) Calculate the theoretical ex rights price per share prior to investing in the proposed business expansion. **(4 marks)**
- (b) Calculate the expected share price following the proposed business expansion using the price/earnings ratio method. **(4 marks)**
- (c) Discuss whether the proposed business expansion is an acceptable use of the finance raised by the rights issue, and evaluate the expected effect on the wealth of the shareholders of Dartig Co. **(6 marks)**
- (d) Using the information provided, calculate the ex div share price predicted by the dividend growth model and discuss briefly why this share price differs from the current market price of Dartig Co. **(6 marks)**

(Total = 20 marks)

- 32 SC Co is evaluating the purchase of a new machine to produce product P, which has a short product life-cycle due to rapidly changing technology. The machine is expected to cost \$1 million. Production and sales of product P are forecast to be as follows:

Year	1	2	3	4
Production and sales (units/year)	35,000	53,000	75,000	36,000

The selling price of product P (in current price terms) will be \$20 per unit, while the variable cost of the product (in current price terms) will be \$12 per unit. Selling price inflation is expected to be 4% per year and variable cost inflation is expected to be 5% per year. No increase in existing fixed costs is expected since SC Co has spare capacity in both space and labour terms.

Producing and selling product P will call for increased investment in working capital. Analysis of historical levels of working capital within SC Co indicates that at the start of each year, investment in working capital for product P will need to be 7% of sales revenue for that year.

SC Co pays tax of 30% per year in the year in which the taxable profit occurs. Liability to tax is reduced by tax allowable depreciation on machinery, which SC Co can claim on a straight-line basis over the four-year life of the proposed investment. The new machine is expected to have no scrap value at the end of the four-year period.

SC Co uses a nominal (money terms) after-tax cost of capital of 12% for investment appraisal purposes.

Required

- (a) Calculate the net present value of the proposed investment in product P. **(12 marks)**
- (b) Calculate the internal rate of return of the proposed investment in product P. **(3 marks)**

- (c) Advise on the acceptability of the proposed investment in product P and discuss the limitations of the evaluations you have carried out.

(5 marks)

(Total = 20 marks)

Answers

**DO NOT TURN THIS PAGE UNTIL YOU HAVE
COMPLETED THE MOCK EXAM**

A PLAN OF ATTACK

Managing your nerves

As you turn the pages to start this mock exam a number of thoughts are likely to cross your mind. At best, examinations cause anxiety so it is important to stay focused on your task for the next three hours! Developing an awareness of what is going on emotionally within you may help you manage your nerves. Remember, you are unlikely to banish the flow of adrenaline, but the key is to harness it to help you work steadily and quickly through your answers.

Working through this mock exam will help you develop the exam stamina you will need to keep going for three hours and 15 minutes.

Managing your time

Planning and time management are two of the key skills which complement the technical knowledge you need to succeed. To keep yourself on time, do not be afraid to jot down your target completion times for each question, perhaps next to the title of the question on the paper. As all the questions are **compulsory**, you do not have to spend time wondering which question to answer!

Doing the exam

Actually doing the exam is a personal experience. There is not a single **right way**. As long as you submit complete answers to all questions after the three hours are up, then your approach obviously works.

Looking through the paper

Section A has 15 objective test questions. This is the section of the paper where the examiner can test knowledge across the breadth of the syllabus. Make sure you read these questions carefully. The distractors are designed to present plausible, but incorrect, answers. Don't let them mislead you. If you really have no idea – guess. You may even be right.

Section B has three questions, each with a scenario and five objective test questions.

Section C has two longer questions:

- **Question 31** is a valuations question, – show all your workings and don't panic! Part (a) is straightforward.
- **Question 32** requires you to calculate NPV, with inflation. Don't get swamped by inflation – show clear workings and lay your thinking on the page like a road map for the marker. Read the detail in part (a) carefully so that you deal with tax allowable depreciation correctly.

Allocating your time

BPP's advice is to always allocate your time **according to the marks for the question**. However, **use common sense**. If you're doing a question but haven't a clue how to do part (b), you might be better off re-allocating your time and getting more marks on another question, where you can add something you didn't have time for earlier on. Make sure you leave time to recheck the MCQs and make sure you have answered them all.

Section A

1 Well on economy and efficiency, but at the cost of effectiveness

Economy is the cost of inputs hence saving money by switching suppliers is good performance in this regard.

Efficiency is the volume of output per unit of input – in this example increased class sizes means increased efficiency as more children are receiving an education per teacher/classroom.

Effectiveness is the quality of outputs. In this case, exam results have reduced hence the education 'produced' is less effective than previously.

Syllabus area A4b

2 Lower taxes, increased government subsidies and contracts being offered, higher demand

Statement 1 describes a contractionary fiscal policy.

Statement 2 describes an expansionary monetary policy.

Statement 3 is correct: fiscal policy refers to the balance of taxation and government spending. In an effort to boost demand, the government would reduce taxes and increase government spending, injecting demand into the economy.

Statement 4 describes a contractionary monetary policy.

Syllabus area B1c

3 The market for new finance being obtained by businesses

The term refers to a capital markets where new securities are issued and sold to investors. The secondary market is where existing financial instruments are traded between investors.

Syllabus area B2c

4 19.7%

Total return to shareholders is a combination of income and capital gain. The capital gain over the period is $\$3.50 - \$3.10 = 40\text{c}$ a share. Dividends were 21c so total return was $(40 + 21) = 61\text{c}$. As a percentage of the opening share price, the return = $61/310 = 19.7\%$

Syllabus area A3d

5 \$10,140

$$\text{EOQ} = \sqrt{[(2 \times C_o \times D) / C_h]} = \sqrt{[(2 \times \$10 \times 2,000) / (10\% \times \$5)]} = 283 \text{ units}$$

Total cost = purchase cost + order costs + holding costs

$$= (2,000 \times \$5) + [(2,000/283) \times \$10] + [(283/2) \times (\$5 \times 10\%)]$$

$$= \$10,000 + \$70.67 + \$70.75 = \$10,141.42$$

= \$10,140 to the nearest \$10

Syllabus area C2c

6 Commercial paper, treasury bills and bankers acceptances do not pay interest. They are issued at a discount and redeemed at a higher value. A certificate of deposit does earn and pay interest however.

Syllabus area B3c

7 41 days

Current inventory days = $360/10 = 36$ days. After new policy: $36 - 6 = 30$ days.

Length of the working capital cycle = receivables days + inventory days – payables days
= $56 + 30 - 45 = 41$ days.

Syllabus area C3a

8

11.4%

ROCE = Average annual accounting profits / Average investment

$$\begin{aligned}\text{Average annual accounting profits} &= (\text{Total cash inflows} - \text{total depreciation}) / 5 \\ &= [(5 \times \$50,000) - (250,000 - 100,000)] / 5 \\ &= \$20,000 \text{ per year}\end{aligned}$$

$$\text{Average investment} = (\$250,000 + \$100,000) / 2 = \$175,000$$

$$\text{ROCE} = \$20,000 / \$175,000 = 0.114 = 11.4\% \text{ per year}$$

Syllabus area D1e

9 3 years

<i>Time</i>	<i>Cashflow</i> \$	<i>Discount factor</i> 10%	<i>Present value</i> \$	<i>Cumulative</i> PV \$
0	(100,000)	1	(100,000)	(100,000)
1	40,000	0.909	36,360	(63,640)
2	40,000	0.826	33,040	(30,600)
3	40,000	0.751	30,040	(560)
4	40,000	0.683	27,320	26,760

Adjusted payback period = 3 years + $[(560/27,320) \times 12]$ months = 3 years to the nearest month.

Syllabus area D3d

10 25% The decision will change should the cost of capital change sufficiently to force the net present value to equal zero. This will occur at the IRR.

$$(150,000/\text{IRR}) - 1,000,000 = 0 \text{ ie the NPV will be zero at the IRR.}$$

$$150,000/\text{IRR} = 1,000,000.$$

$$\text{IRR} = 150,000/1,000,000 = 0.15 = 15\%.$$

The current estimated cost of capital is 12%, hence sensitivity = $(15 - 12)/12 = 25\%$ sensitivity.

Syllabus area D3b

11 'A capital expenditure budget is evidence of a soft capital constraint' is true. 'Whether projects are divisible or indivisible, the investment plan should seek to maximise net present value per \$ invested' is false. A soft capital constraint is internally imposed. A capital expenditure budget is an internal limit of capital investment hence it is evidence of a soft capital constraint.

The investment plan should seek to maximise net present value overall, not per dollar invested. This latter might suggest only investing in the project with the highest profitability index. Other projects may have a lower profitability index, but this does not mean they should be rejected if there is sufficient capital available to invest in them also.

Syllabus area D4c

12 Retained profits are a free source of finance

Although free to raise, using retained earnings as a source of finance (by withholding a dividend) is not free to use. It is equity finance and requires the cost of equity to be generated as a return.

B is an advantage. Other forms of finance require up-front justification to be considered by potential investors before funds are made available for investment.

C is an advantage. There are no issue costs.

D is an advantage. As the funds are already on hand, availability is essentially instant.

Syllabus area E1e

13 **\$4.20** Dividend growth rate = $\frac{33.6}{32} - 1 = 1.05 = 5\%$ per year

$$MV = \frac{33.6}{0.13 - 0.05} = \$4.20$$

Syllabus area F2c

14 It is exposed to higher levels of systematic risk than company B

Statement 1 is not necessarily correct. Beta factors only measure systematic risk, not total risk (which also includes specific/unsystematic risk).

Statement 2 is incorrect. Companies with different beta factors may face the same systematic risk factors, only to a differing degree.

Statement 3 is incorrect. This (assumed) temporary mispricing is unlikely to affect the beta factor overall.

Statement 4 is correct. Beta factors measure the level of systematic risk associated with a share.

Syllabus area E2a

15 Realisable value of operating assets

The realisable value of operating assets is less relevant as this valuation technique is primarily involved in valuing the income of a going concern, hence values for the statement of financial position assets used to generate that income are not immediately relevant.

The value of surplus assets would be relevant however as they are likely to be sold off immediately - they will create an immediate income without affecting forecast operational flows.

Syllabus area F2c

Section B

16 Utrec, Tilbur, Eind, Amster

PI = PV of future cash flows / PV of capital investment

Project	Outlay in Year 0	PV	NPV	Ratio (PV / outlay)	Ranking
	\$	\$	\$		
Amster	100,000	111,400	11,400	1.114	4th
Eind	56,000	62,580	6,580	1.118	3rd
Utrec	60,000	68,760	8,760	1.146	1st
Tilbur	90,000	102,400	12,400	1.138	2nd

17 PI can only be used if projects are divisible

The weaknesses of the PI method are:

It does not take into account the absolute size of the individual projects. A project with a high index might be very small and therefore only generate a small NPV.

It does not highlight the projects which are slowest in generating returns. It is possible that the project with the highest PI is the slowest in generating returns'

It does not allow for uncertainty about the outcome of each project. In fact it assumes that there is complete certainty about each outcome.

18 \$105,406

Present value of cash flows = $(250,000 + 17,860 + 23,113 + 22,784 + 6,360) = (\$320,117)$

Cumulative present value factor 3.037

Equivalent annual cost = $\$320,117 / 3.037 = \$105,406$

19 Statement 1 is false and statement 2 is true

The equivalent annual cost method is the most convenient method of analysis to use in a period of **no** inflation, because it is converting the NPV of the cost of buying and using the asset into an equivalent annual cost. In times of high inflation, this cost would keep increasing (so statement 1 is false).

The EAC method assumes that the machine can be replaced by exactly the same machine in perpetuity and this is one of the weakness of the EAC method. It is not usually possible to replace something with exactly the same thing as assets are constantly developing. Computers in particular, are developing very quickly and so it can make sense to replace certain assets more often than the EAC method dictates.

20 \$17,654

EV of year 2 cash flow = $(19,000 \times 0.55) + (26,000 \times 0.45) = 22,150$

PV discounted at 12% = $22,150 \times 0.797 = \$17,654$

21 2 only

TGA Co should enter into a forward contract to sell €500,000 in three months. Statement 1 is incorrect. TGA Co could use a money market hedge but €500,000 would have to be borrowed, then converted into dollars and then placed on deposit. Statement 3 is incorrect. An interest rate swap, swaps one type of interest payment (such as fixed interest) for another (such as floating rate interest). Therefore it would not be suitable.

22 \$296,384

Forward market hedge

Receipt from forward contract = $\text{€}500,000 / 1.687 = \$296,384$.

23

\$294,858

Money market hedge

3-month euro borrowing rate = $9\% \times 3/12 = 2.25\%$

3-month dollar deposit rate = $4\% \times 3/12 = 1\%$

Borrow euros now $500,000/1.0225 = €488,998$

Convert to \$ now $488,998/1.675 = \$291,939$

\$ after investing $\$291,939 \times 1.01 = \$294,858$

24

Statement 1 is true and statement 2 is false.

One of the advantages of futures contracts is that the transaction costs are lower than other hedging methods. One of the disadvantages is that they cannot be tailored to the user's requirements. So statement 1 is true and statement 2 is false.

25

Statement 1 refers to translation risk. Statement 2 relates to economic risk.

26

Traditional view

The traditional view assumes there is an optimal balance between debt and equity (there is a 'U' shaped weighted average cost of capital (WACC) curve) hence choosing finance to aim for the optimum suggests the traditional view is adopted.

Modigliani-Miller (no tax) concludes the WACC is unaffected by the finance decision hence the choice of debt compared to equity is irrelevant.

Modigliani-Miller (with tax) concludes that due to the tax benefits of paying interest, as much finance as possible should be in the form of debt as increasing gearing will reduce the WACC. Hence equity would never be chosen.

Residual view / theory is not directly relevant to the capital structure decision. This term more directly relates to dividend policy.

27

Semi-strong form efficient

Share price in a semi-strong form market reflects all publicly available information, but not privately held information. Thus the majority of share price reaction occurs to and around public announcements.

28

\$96.40

The conversion value is \$100 cash or 70 shares, whichever is worth more (as conversion is at the investor's option). The share price on conversion is predicted to be $\$1.25 \times (1.04)^5 = \1.52 , hence if converted the shares would be worth $70 \times \$1.52 = \106.40 . As this is more than the cash alternative (\$100) investors would choose to convert, hence the conversion value = \$106.40.

The investor pays market price, and they receive the pre tax interest hence the pre tax cost of debt is used to value the loan note:

Time		Cash flow (\$)	Discount factor 10%	Present value (\$)
1-5	Interest	$8\% \times \$100 = \8	3.791	30.33
5	Conversion value	\$106.4	0.621	66.07
				<u>96.40</u>

29

Forward rate agreements are the interest rate equivalent of forward exchange contracts

Statement 1 is incorrect: Although futures are flexible with timing, they are for standardised amounts which may therefore not match the size of hedge needed exactly.

Statement 2 is incorrect: Options afford the holder the right but not the obligation to exercise an option. They can be allowed to lapse. In the case of exchange traded options they can also be sold on mid-term.

Statement 3 is correct: A forward rate agreement ('FRA') creates an obligation for a 'top-up' payment or receipt. In the case of a loan, when the FRA payment is added to the underlying loan interest payment, the net interest payment is fixed at the FRA rate.

Statement 4 is incorrect: The statement refers to smoothing (a mix of fixed and floating rates to make effective interest rates less variable.) Matching – generally employed by banks – refers to matching interest rates on assets to the interest rate on liabilities.

30

1 and 2 only

Statement 1: Increased uncertainty will increase the preference for liquidity, and will increase required yields into the future.

Statement 2: If the markets feel interest rates are going to rise, the required return on longer dated bonds will increase in line with these expectations.

Statement 3 is false. This will lead to the curve flattening.

Section C

Question 31

Text references. Rights issues are covered in Chapter 12, estimating the growth rate and the dividend growth model are covered in Chapter 15 and the P/E ratio is covered in Chapter 14..

Top tips. You need to recognise the need to calculate the growth rate of dividends in this question for both parts (b) and (d). If this is too tricky, state a suitable figure and carry on with the calculations. Make sure you write suitably detailed points in the discussion parts and don't just focus on the calculations.

Easy marks. There are easy marks available for the calculations in part (a) and (d).

Examiner's comments. In part (a) many candidates gained full marks for their calculations. Weaker answers made errors as regards the form of the issue (it was 1 for 4, not 4 for 1), or thought the theoretical ex rights price was the rights issue price, or calculated the value of the rights. In part (b) a number of candidates were not able to calculate the price/earnings ratio by dividing the current share price by the current EPS. Calculating the EPS after the expansion by multiplying the current EPS by the average historic EPS growth rate was also a problem for some candidates, who were unable to calculate average historic growth rate, or who applied the growth rate to the average EPS rather than the current EPS. Some students were also unfamiliar with the P/E valuation method, even though this is discussed in the study texts.

Better answers in part (c) looked to compare the theoretical rights price per share (the share price before the rights issue funds were invested) with the share price after the investment had taken place (for example the share price calculated in part (b)), or to compare the return from the investment (for example, total shareholder return, which is the sum of capital gain and divided yield) with the cost of equity.

Many candidates gained full marks in part (d). Marks were lost where candidates used EPS rather than dividend per share in the dividend growth model, or were not able to calculate the dividend growth rate, or used incorrect values in the dividend growth model. A surprising number of candidates did not use the dividend growth model given in the formula sheet, but used the rearranged version of the formula that is used to calculate the cost of equity. Some candidates mistakenly thought that the cost of equity calculated by this formula was the same as the share price.

Marking scheme

	Marks
(a) Rights issue price	2
Theoretical ex-rights price per share	<u>2</u>
	4
(b) Existing P/E ratio	1
Revised EPS	1
Share price using P/E method	<u>2</u>
	4
(c) Discussion of share price comparisons	4
Calculation of capital gain and comment	<u>2</u>
	6
(d) Average dividend growth rate	2
Ex-div market price per share	2
Discussion	<u>2</u>
	6
	<u><u>20</u></u>

- (a) Rights issue price = $\$2.50 \times 80\% = \2.00 per share

Theoretical ex-rights price

	\$
4 shares @ \$2.50	10.00
1 share @ \$2.00	2.00
<u>5</u>	<u>12.00</u>

Theoretical ex-rights price (TERP) = $12.00/5 = \$2.40$

- (b) Average growth rate of earnings per share:

$$1 + g = \sqrt[4]{\frac{32.4}{27.7}}$$

$$1 + g = 1.03996$$

$$g = 4\%$$

EPS following expansion = $32.4 \times 1.04 = 33.7$ cents per share

Current P/E ratio = $250/32.4 = 7.7$ times

Share price following expansion = $\$0.337 \times 7.7 = \2.60

- (c) A company will only be able to raise finance if investors think the **returns** they can expect are satisfactory in view of the **risks** they are taking. The proposed business expansion will be an acceptable use of the rights issue funds if it **increases shareholder wealth**.

This can be measured by looking at the effect on the **share price**. The current share price is \$2.50 and the future share price predicted by the P/E method is \$2.60. This indicates that shareholder wealth would increase. However, the capital gain is actually larger than this as shareholders will obtain new shares at a discount, resulting in a theoretical ex-rights price of \$2.40. The **capital gain for shareholders** is therefore $\$2.60 - \$2.40 = 20$ cents per share.

Alternatively, we can consider the effect on **total shareholder wealth**. The rights issue involves 2.5 million shares (\$5m/\$2 per share). There were therefore 10 million shares (2.5×4) before the investment and Dartig was worth \$25m ($10m \times \2.50). After the investment, Dartig is worth \$27.5m ($12.5m \times \$2.60 - \$5m$) which is a **capital gain** of \$2.5m.

If investors believe that the expansion will enable the business to grow even further, the capital gain could be even greater. If, however, investors do not share the company's confidence in the future, the share price could fall.

- (d) **Dividend growth model**

$$P_0 = \frac{D_0(1+g)}{r_e - g}$$

Cost of equity (r_e) = 10%

$$g = \sqrt[4]{\frac{15.0}{12.8}} = 4\%$$

Alternative approach

Using the Gordon growth model $g = br_e$

Average payout ratio over the last 4 years has been 47%, so the average retention ratio has been 53%.

$$g = 53\% \times 10\% = 5.3\%$$

$$D_0 = \$0.15$$

$$P_0 = \frac{0.15(1+0.04)}{0.1-0.04}$$

$$= \$2.60$$

This is 10 cents per share more than the current share price of Dartig Co.

Reasons for difference in share price

The dividend growth model assumes that the **historical trend** of dividend per share payments will **continue into the future**. The future dividend growth rate may however differ from the average historical dividend growth rate, and the current share price may incorporate a more conservative estimate of the future dividend growth rate.

The **cost of equity** of Dartig Co may not be 10%. It may be difficult to make a confident estimate of the cost of capital.

The dividend valuation model assumes that investors act and **homogenously**. In reality, different shareholders will have different expectations and there may be a degree of **inefficiency** in the capital market on which the shares of Dartig Co are traded.

Question 32

Text references. Investment appraisal is covered in Chapters 8 and 9.

Top tips. This question covers investment appraisal. Read the detail in the question carefully so that you deal with part (a) correctly. For example, working capital is recovered in the last two years of the investment. Make an assumption and carry on if you get stuck on any part.

Make sure you answer the specific requirements of the discussion in part (c) and do not just write everything you know about NPV.

Easy marks. Using the standard proforma for the calculations in part (a) will help you to gain easy marks even if you get stuck on the harder aspects. Part (b) should provide an easy three marks if you are sufficiently familiar with this technique.

Examiner's comments. Many answers to part (a) gained high marks and dealt correctly with most of the issues involved with the calculation. The treatment of working capital investment was a source of regular errors, however. Many answers put the investment in working capital at the end, rather than at the start, of each year, and included total investment rather than incremental investment. Another common error was to treat investment in working capital as tax-allowable (and even to call it a fixed cost), when in fact it has no tax effect at all.

Many answers gained high marks in part (b) and produced a result consistent with findings in part (a). Markers noted that some candidates made illogical choices of discount rates in their calculations, choosing to work for example with two negative NPV values, rather with one positive and one negative NPV value. While linear interpolation and linear extrapolation use the same mathematical approach, candidates should note that interpolation is more likely to be accurate than extrapolation in calculating IRR.

It was pleasing to note that very few candidates confused IRR with accounting rate of return (return on capital employed).

Part (c) asked for advice on the acceptability of the investment project and discussion of the limitations of the NPV and IRR evaluations performed. Most answers correctly advised on acceptability in terms that were consistent with their earlier evaluations. Many answers struggled to discuss the limitations of the evaluations in any depth, tending to offer one or two general criticisms of the NPV and IRR appraisal methods. Better answers discussed the limiting assumptions underlying the values selected for the project variables and the reasons why, for example, fixed costs had been omitted.

Marking scheme

	Marks
(a) Inflated sales revenue	2
Inflated variable costs	2
Tax allowable depreciation	2
Taxation	1
Working capital	3
Discount factors	1
Net present value calculation	1
	<u>12</u>
(b) Net present value calculation	1
Internal rate of return calculation	2
	<u>3</u>
(c) Net present value comment	1
Internal rate of return comment	1-2
Discussion of limitations	3-4
	Maximum
	<u>5</u>
	<u>20</u>

(a) Calculation of NPV

Year	0	1	2	3	4
	\$	\$	\$	\$	\$
Sales revenue (W1)		728,000	1,146,390	1,687,500	842,400
Variable costs (W2)		441,000	701,190	1,041,750	524,880
Contribution		287,000	445,200	645,750	317,520
Taxation @ 30%		(86,100)	(133,560)	(193,725)	(95,256)
Capital expenditure	(1,000,000)				
Working capital (W3)	(50,960)	(29,287)	(37,878)	59,157	58,968
Tax benefit of tax depreciation (W4)		75,000	75,000	75,000	75,000
Net cash flow	(1,050,960)	246,613	348,762	586,182	356,232
Discount factor @ 12%	1.000	0.893	0.797	0.712	0.636
Present value	<u>(1,050,960)</u>	<u>220,225</u>	<u>277,963</u>	<u>417,362</u>	<u>226,564</u>
NPV	\$91,154				

Workings

(1) Sales revenue

Year	1	2	3	4
	\$	\$	\$	\$
Selling price ($\times 1.04$)	\$20.80	\$21.63	\$22.50	\$23.40
Sales volume in units	35,000	53,000	75,000	36,000
Sales revenue	\$728,000	\$1,146,390	\$1,687,500	\$842,400

(2) Variable costs

Year	1	2	3	4
	\$	\$	\$	\$
Variable cost ($\times 1.05$)	\$12.60	\$13.23	\$13.89	\$14.58
Sales volume in units	35,000	53,000	75,000	36,000
Variable cost	\$441,000	\$701,190	\$1,041,75	\$524,880

(3) *Working capital*

Year	0	1	2	3	4
	\$	\$	\$	\$	\$
Sales revenue	728,000	1,146,390	1,687,500	842,400	
Working capital requirement @ 7%	50,960	80,247	118,125	58,968	
Incremental working capital cash flow	(50,960)	(29,287)	(37,878)	59,157	58,968

(4) *Tax benefit of tax depreciation*

Depreciation = \$1,000,000/4 = \$250,000 per year

Tax benefit = 30% × \$250,000 = \$75,000

(b) **Calculation of internal rate of return**

Net cash flow	(1,050,960)	246,613	348,762	586,182	356,232
Discount factor @ 20%	1.000	0.833	0.694	0.579	0.482
Present value	<u>(1,050,960)</u>	<u>205,429</u>	<u>242,041</u>	<u>339,399</u>	<u>171,704</u>
NPV	(92,387)				

$$IRR \approx a + \left(\left(\frac{NPV_a}{NPV_a - NPV_b} \right) (b - a) \right) \%$$

$$IRR \approx 12 + \left[\frac{91,154}{91,154 + 92,387} \times (20 - 12) \right] \% = 16\%$$

(c) **Acceptability of the proposed investment in product P**

The **NPV is positive** so the proposed investment can be recommended on financial grounds.

The **IRR is greater than the discount rate** of 12% used by SC Co for investment appraisal purposes so the proposed investment is again financially acceptable. The investment has **conventional cashflows** (an initial cash outflow followed by a series of inflows) and will therefore only have **one IRR**.

Limitations of the evaluations

Forecast sales volumes have been used for both investment appraisal methods and the accuracy of the results is therefore heavily dependant on the accuracy of these forecasts. Product P has a **short product life-cycle** which makes forecast sales volumes particularly unpredictable.

It would be useful to carry out '**what if**' and **sensitivity analysis** to give a more informed picture of what would happen if sales volumes were better or worse than predicted.

The analysis has used **predicted inflation rates** for sales price and variable costs which do not change over the four year period. This is unlikely in reality as price increases will vary according to **prevailing economic conditions** and **unexpected events**. Again, sensitivity analysis would help to assess the effects on the viability of the product if inflation was higher than expected.

Fixed costs have not been included in the investment appraisal. This is because SC has **spare capacity** in both space and labour terms so it is assumed that fixed costs will not change as a result of the investment. This assumption may be questionable in the longer term, especially as production of product P in Year 3 will be **double** that in Year 1.

ACCA

Paper F9

Financial Management

Mock Examination 3

Specimen exam

Question Paper

Time allowed: 3 hours 15 minutes

ALL questions are compulsory and MUST be attempted

**DO NOT OPEN THIS PAPER UNTIL YOU ARE READY TO START UNDER
EXAMINATION CONDITIONS**

Section A – ALL 15 questions are compulsory and MUST be attempted

Each question is worth 2 marks.

- 1 The home currency of ACB Co is the dollar (\$) and it trades with a company in a foreign country whose home currency is the Dinar. The following information is available:

	<i>Home country</i>	<i>Foreign country</i>
Spot rate	20.00 Dinar per \$	
Interest rate	3% per year	7% per year
Inflation rate	2% per year	5% per year

What is the six-month forward exchange rate?

- A 20.39 Dinar per \$
- B 20.30 Dinar per \$
- C 20.59 Dinar per \$
- D 20.78 Dinar per \$

- 2 The following financial information relates to an investment project:

	\$'000
Present value of sale revenue	50,025
Present value of variable costs	25,475
Present value of contribution	24,550
Present value of fixed costs	18,250
Present value of operating income	6,300
Initial investment	5,000
Net present value	1,300

What is the sensitivity of the net present value of the investment project to a change in sales volume?

- A 7.1%
- B 2.6%
- C 5.1%
- D 5.3%

- 3 Gurdip plots the historic movements of share prices and uses this analysis to make her investment decisions.

To what extent does Gurdip believe capital markets to be efficient?

- A Not efficient at all
- B Weak form efficient
- C Semi-strong form efficient
- D Strong form efficient

- 4 **Which of the following statements concerning capital structure theory is correct?**

- A In the traditional view, there is a linear relationship between the cost of equity and financial risk
- B Modigliani and Miller said that, in the absence of tax, the cost of equity would remain constant
- C Pecking order theory indicates that preference shares are preferred to convertible debt as a source of finance
- D Business risk is assumed to be constant as the capital structure changes

- 5 **Which of the following actions is LEAST likely to increase shareholder wealth?**
- A The weighted average cost of capital is decreased by a recent financing decision
 - B The financial rewards of directors are linked to increasing earnings per share
 - C The board of directors decides to invest in a project with a positive NPV
 - D The annual report declares full compliance with the corporate governance code

- 6 **Which of the following statements are features of money market instruments?**

- (1) A negotiable security can be sold before maturity
 - (2) The yield on commercial paper is usually lower than that on treasury bills
 - (3) Discount instruments trade at less than face value
- A 2 only
 - B 1 and 3 only
 - C 2 and 3 only
 - D 1, 2 and 3

- 7 The following are extracts from the statement of profit or loss of CQB Co:

	\$'000
Sales income	60,000
Cost of sales	50,000
Profit before interest and tax	10,000
Interest	<u>4,000</u>
Profit before tax	6,000
Tax	<u>4,500</u>
Profit after tax	<u>1,500</u>

60% of the cost of sales is variables costs.

- What is the operational gearing of CQB Co?**

- A 5.0 times
- B 2.0 times
- C 0.5 times
- D 3.0 times

- 8 The management of XYZ Co has annual credit sales of \$20 million and accounts receivable of \$4 million. Working capital is financed by an overdraft at 12% interest per year. Assume 365 days in a year.

- What is the annual finance cost saving if the management reduces the collection period to 60 days?**

- A \$85,479
- B \$394,521
- C \$78,904
- D \$68,384

- 9 **Which of the following statements concerning financial management are correct?**

- (1) It is concerned with investment decisions, financing decisions and dividend decisions
 - (2) It is concerned with financial planning and financial control
 - (3) It considers the management of risk
- A 1 and 2 only
 - B 1 and 3 only
 - C 2 and 3 only
 - D 1, 2 and 3

- 10 SKV Co has paid the following dividends per share in recent years:

Year	20X4	20X3	20X2	20X1
Dividend (\$ per share)	0.360	0.338	0.328	0.311

The dividend for 20X4 has just been paid and SKV Co has a cost of equity of 12%.

Using the geometric average historical dividend growth rate and the dividend growth model, what is the market price of SKV Co shares on an ex dividend basis?

- A \$4.67
- B \$5.14
- C \$5.40
- D \$6.97

- 11 'There is a risk that the value of our foreign currency-denominated assets and liabilities will change when we prepare our accounts'

To which risk does the above statement refer?

- A Translation risk
- B Economic risk
- C Transaction risk
- D Interest rate risk

- 12 The following information has been calculated for A Co:

Trade receivables collection period:	52 days
Raw material inventory turnover period:	42 days
Work in progress inventory turnover period:	30 days
Trade payables payment period:	66 days
Finished goods inventory turnover period:	45 days

What is the length of the working capital cycle?

- A 103 days
- B 131 days
- C 235 days
- D 31 days

- 13 **Which of the following is/are usually seen as benefits of financial intermediation?**

- (1) Interest rate fixing
- (2) Risk pooling
- (3) Maturity transformation

- A 1 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

- 14 **Which of the following statements concerning working capital management are correct?**

- (1) The twin objectives of working capital management are profitability and liquidity
- (2) A conservative approach to working capital investment will increase profitability
- (3) Working capital management is a key factor in a company's long-term success

- A 1 and 2 only
- B 1 and 3 only
- C 2 and 3 only
- D 1, 2 and 3

15 Governments have a number of economic targets as part of their monetary policy.

Which of the following targets relate predominantly to monetary policy?

- (1) Increasing tax revenue
- (2) Controlling the growth in the size of the money supply
- (3) Reducing public expenditure
- (4) Keeping interest rates low

- A 1 only
- B 1 and 3
- C 2 and 4 only
- D 2, 3 and 4

(Total = 30 marks)

Section B – ALL 15 questions are compulsory and MUST be attempted

Each question is worth 2 marks.

The following scenario relates to questions 16–20.

Par Co currently has the following long-term capital structure:

	\$m	\$m
Equity finance		
Ordinary shares	30.0	
Reserves	<u>38.4</u>	
		68.4
Non-current liabilities		
Bank loans	15.0	
8% convertible loan notes	40.0	
5% redeemable preference shares	<u>15.0</u>	
		70.0
Total equity and liabilities		<u>138.4</u>

The 8% loan notes are convertible into eight ordinary shares per loan note in seven years' time. If not converted, the loan notes can be redeemed on the same future date at their nominal value of \$100. Par Co has a cost of debt of 9% per year.

The ordinary shares of Par Co have a nominal value of \$1 per share. The current ex dividend share price of the company is \$10.90 per share and share prices are expected to grow by 6% per year for the foreseeable future. The equity beta of Par Co is 1.2.

- 16 The loan notes are secured on non-current assets of Par Co and the bank loan is secured by a floating charge on the current assets of the company.

In terms of risk to the investor, what are the riskiest and least risky sources of finance for Par Co?

	Riskiest	Least risky
A	Redeemable preference shares	Bank loan
B	Ordinary shares	Bank loan
C	Bank loan	Loan notes
D	Ordinary shares	Loan notes

- 17 **What is the conversion value of the 8% loan notes of Par Co after seven years?**

- A \$16.39
- B \$111.98
- C \$131.12
- D \$71.72

- 18 **Assuming the conversion value after seven years is \$126.15, what is the current market value of the 8% loan notes of Par Co?**

- A \$115.20
- B \$109.26
- C \$94.93
- D \$69.00

- 19 **Which of the following statements relating to the capital asset pricing model is correct?**

- A The equity beta of Par Co considers only business risk
- B The capital asset pricing model considers systematic risk and unsystematic risk
- C The equity beta of Par Co indicates that the company is more risky than the market as a whole
- D The debt beta of Par Co is zero

20 Which of the following statements are problems in using the price/earnings ratio method to value a company?

- (1) It is the reciprocal of the earnings yield
 - (2) It combines stock market information and corporate information
 - (3) It is difficult to select a suitable price/earnings ratio
 - (4) The ratio is more suited to valuing the shares of listed companies
- A 1 and 2 only
B 3 and 4 only
C 1, 3 and 4 only
D 1, 2, 3 and 4

The following scenario relates to questions 21–25

ZPS Co, whose home currency is the dollar, took out a fixed-interest peso bank loan several years ago when peso interest rates were relatively cheap compared to dollar interest rates. ZPS Co does not have any income in pesos. Economic difficulties have now increased peso interest rates while dollar interest rates have remained relatively stable.

ZPS Co must pay interest on the dates set by the bank. A payment of 5,000,000 pesos is due in six months' time. The following information is available:

Spot rate	12.500–12.582 pesos per \$
Six-month forward rate	12.805–12.889 pesos per \$

Interest rates which can be used by ZPS Co:

	Borrow	Deposit
Peso interest rates	10.0% per year	7.5% per year
Dollar interest rates	4.5% per year	3.5% per year

21 What is the dollar cost of a forward market hedge?

- A \$390,472
B \$387,928
C \$400,000
D \$397,393

22 Which of the following statements relate to purchasing power parity theory?

- (1) The theory holds in the long term rather than the short term
- (2) The exchange rate reflects the different cost of living in two countries
- (3) The forward rate can be found by multiplying the spot rate by the ratio of the interest rates of the two countries

- A 1, 2 and 3
B 1 and 2 only
C 1 and 3 only
D 2 only

23 What are the appropriate six-month interest rates for ZPS Co to use if the company hedges the peso payment using a money market hedge?

Deposit rate	Borrowing rate
A 7.5%	4.5%
B 1.75%	5.0%
C 3.75%	2.25%
D 3.5%	10.0%

24 Which of the following methods are possible ways for ZPS Co to hedge its existing foreign currency risk?

- (1) Matching receipts and payments
- (2) Currency swaps
- (3) Leading or lagging
- (4) Currency futures

- A 1, 2, 3 and 4
- B 1 and 3 only
- C 2 and 4 only
- D 2, 3 and 4 only

25 ZPS Co also trades with companies in Europe which use the Euro as their home currency. In three months' time ZPS Co will receive €300,000 from a customer.

Which of the following is the correct procedure for hedging this receipt using a money market hedge?

- A Step 1 Borrow an appropriate amount in Euro now
Step 2 Convert the Euro amount into dollars
Step 3 Place the dollars on deposit
Step 4 Use the customer payment to repay the loan
- B Step 1 Borrow an appropriate amount in dollars now
Step 2 Place the dollars on deposit now
Step 3 Convert the dollars into Euro in three months' time
Step 4 Use the customer payment to repay the loan
- C Step 1 Borrow an appropriate amount in dollars now
Step 2 Convert the dollar amount into Euro
Step 3 Place the Euro on deposit
Step 4 Use the customer payment to repay the loan
- D Step 1 Borrow an appropriate amount in Euro now
Step 2 Place the Euro on deposit now
Step 3 Convert the Euro into dollars in three months' time
Step 4 Use the customer payment to repay the loan

The following scenario relates to questions 26–30

Ridag Co operates in an industry which has recently been deregulated as the government seeks to increase competition in the industry.

Ridag Co plans to replace an existing machine and must choose between two machines. Machine 1 has an initial cost of \$200,000 and will have a scrap value of \$25,000 after four years. Machine 2 has an initial cost of \$225,000 and will have a scrap value of \$50,000 after three years. Annual maintenance costs of the two machines are as follows:

Year	1	2	3	4
Machine 1 (\$ per year)	25,000	29,000	32,000	35,000
Machine 2 (\$ per year)	15,000	20,000	25,000	

Where relevant, all information relating to this project has already been adjusted to include expected future inflation. Taxation and tax allowable depreciation must be ignored in relation to Machine 1 and Machine 2.

Ridag Co has a nominal before-tax weighted average cost of capital of 12% and a nominal after-tax weighted average cost of capital of 7%.

26 In relation to Ridag Co, which of the following statements about competition and deregulation are true?

- (1) Increased competition should encourage Ridag Co to reduce costs
- (2) Deregulation will lead to an increase in administrative and compliance costs for Ridag Co
- (3) Deregulation should mean an increase in economies of scale for Ridag Co
- (4) Deregulation could lead to a decrease in the quality of Ridag Co's products

- A 1 and 4
- B 2 and 3
- C 1 and 3
- D 2 and 4

27 What is the equivalent annual cost of Machine 1?

- A \$90,412
- B \$68,646
- C \$83,388
- D \$70,609

28 Which of the following statements about Ridag Co using the equivalent annual cost method are true?

- (1) Ridag Co cannot use the equivalent annual cost method to compare Machine 1 and Machine 2 because they have different useful lives
- (2) The machine which has the lowest total present value of costs should be selected by Ridag Co

- A 1 only
- B Both 1 and 2
- C 2 only
- D Neither 1 nor 2

29 Doubt has been cast over the accuracy of the year 2 and year 3 maintenance costs for Machine 2. On further investigation it was found that the following potential cash flows are now predicted:

Year	Cash flow (\$)	Probability
2	18,000	0.3
2	25,000	0.7
3	23,000	0.2
3	24,000	0.35
3	30,000	0.45

What is the expected present value of the maintenance costs for year 3?

- A \$26,500
- B \$18,868
- C \$21,624
- D \$35,173

30 Ridag Co is appraising a different project, with a positive NPV. It is concerned about the risk and uncertainty associated with this other project.

Which of the following statements about risk, uncertainty and the project is true?

- A Sensitivity analysis takes into account the interrelationship between project variables
- B Probability analysis can be used to assess the uncertainty associated with the project
- C Uncertainty can be said to increase with project life, while risk increases with the variability of returns
- D A discount rate of 5% could be used to lessen the effect of later cash flows on the decision

(Total = 30 marks)

Section C – BOTH questions are compulsory and MUST be attempted

- 31 PV Co, a large stock-exchange-listed company, is evaluating an investment proposal to manufacture Product W33, which has performed well in test marketing trials conducted recently by the company's research and development division. Product W33 will be manufactured using a fully-automated process which would significantly increase noise levels from PV Co's factory. The following information relating to this investment proposal has now been prepared:

Initial investment	\$2 million
Selling price (current price terms)	\$20 per unit
Expected selling price inflation	3% per year
Variable operating costs (current price terms)	\$8 per unit
Fixed operating costs (current price terms)	\$170,000 per year
Expected operating cost inflation	4% per year

The research and development division has prepared the following demand forecast as a result of its test marketing trials. The forecast reflects expected technological change and its effect on the anticipated life-cycle of Product W33.

Year	1	2	3	4
Demand (units)	60,000	70,000	120,000	45,000

It is expected that all units of Product W33 produced will be sold, in line with the company's policy of keeping no inventory of finished goods. No terminal value or machinery scrap value is expected at the end of four years, when production of Product W33 is planned to end. For investment appraisal purposes, PV Co uses a nominal (money) discount rate of 10% per year and a target return on capital employed of 30% per year. Ignore taxation.

Required

- (a) Calculate the following values for the investment proposal:
- (i) net present value; (5 marks)
 - (ii) internal rate of return; and (3 marks)
 - (iii) return on capital employed (accounting rate of return) based on average investment. (3 marks)
- (b) Briefly discuss your findings in each section of (a) above and advise whether the investment proposal is financially acceptable. (4 marks)
- (c) Discuss how the objectives of PV Co's stakeholders may be in conflict if the project is undertaken. (5 marks)
- (20 marks)**

- 32 DD Co has a dividend payout ratio of 40% and has maintained this payout ratio for several years. The current dividend per share of the company is 50c per share and it expects that its next dividend per share, payable in one year's time, will be 52c per share.

The capital structure of the company is as follows:

	\$m	\$m
Equity		
Ordinary shares(nominal value \$1 per share)	25	
Reserves	35	
		60
Debt		
Bond A (nominal value \$100)	20	
Bond B (nominal value \$100)	10	
		30
		90

Bond A will be redeemed at nominal value in ten years' time and pays annual interest of 9%. The cost of debt of this bond is 9.83% per year. The current ex interest market price of the bond is \$95.08.

Bond B will be redeemed at nominal value in four years' time and pays annual interest of 8%. The cost of debt of this bond is 7.82% per year. The current ex interest market price of the bond is \$102.1.

DD Co has a cost of equity of 12%. Ignore taxation.

Required

- (a) Calculate the following values for DD Co:

(i) Ex dividend share price, using the dividend growth model; **(3 marks)**
(ii) Capital gearing (debt divided by debt plus equity) using market values; and **(2 marks)**
(iii) Market value weighted average cost of capital. **(2 marks)**

- (b) Discuss whether a change in dividend policy will affect the share price of DD Co. **(8 marks)**
(c) Explain why DD Co's capital instruments have different levels of risk and return. **(5 marks)**

(Total = 20 marks)

Answers

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- If your question paper has less than 60 questions, fill in the relevant answers only.
- Each multiple choice question has only one correct answer. Fill in one bubble only (A, B, C, or D) to indicate your choice of answer.
- The mark available for each question is indicated on your question paper. There is no penalty for incorrect answers or unanswered questions.
- No marks are awarded if you do not clearly indicate your final choice or if more than one bubble per question is filled in.
- To void a selected answer, place a cross (X) over the bubble.

HOW TO SHADE THE BUBBLES

EXAMPLE

Right mark

Wrong mark



To amend your selection place a cross over unwanted bubble



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Section A

- 1 **A** $20 \times (1.035/1.015) = 20.39$ Dinar per \$
- 2 **D** Sensitivity to a change in sales volume = $100 \times 1,300/24,550 = 5.3\%$
- 3 **A** Gurdip is basing her investment decisions on technical analysis, which means that she believes the stock market is not efficient at all, not even weak form efficient.
- 4 **D** The statement about business risk is correct.
- 5 **B** Increases in shareholder wealth will depend on increases in cash flow, rather than increases in earnings per share, ie increases in profit. If the financial rewards of directors are linked to increasing earnings per share, for example, through a performance-related reward scheme, there is an incentive to increasing short-term profit at the expense of longer growth in cash flows and hence shareholder wealth.
- 6 **B** Both statements 1 and 3 are correct.
- 7 **D** Operational gearing = Contribution/PBIT = $[60,000 - (50,000 \times 0.6)]/10m = 3$ times
- 8 **A** Finance cost saving = $13/365 \times \$20m \times 0.12 = \$85,479$
- 9 **D** All three statements concerning financial management are correct.
- 10 **C** The geometric average dividend growth rate is $(36.0/31.1)^{1/3} - 1 = 5\%$
The ex div share price = $(36.0 \times 1.05)/(0.12 - 0.05) = \5.40
- 11 **A** The statement refers to translation risk.
- 12 **A** The length of the operating cycle is $52 + 42 + 30 - 66 + 45 = 103$ days.
- 13 **C** Risk pooling and maturity transformation are always included in a list of benefits of financial intermediation.
- 14 **B** Both statements 1 and 3 are correct.
- 15 **C** The two targets relating predominantly to monetary policy are controlling the growth in the size of the money supply and keeping interest rates low (2 and 4).

Section B

- 16 **D** The secured loan notes are safer than the bank loan, which is secured on a floating charge. The redeemable preference shares are above debt in the creditor hierarchy. Ordinary shares are higher in the creditor hierarchy than preference shares.
- 17 **C** Future share price after seven years = $10.90 \times 1.06^7 = \$16.39$ per share
Conversion value of each loan note = $16.39 \times 8 = \$131.12$ per loan note
- 18 **B** Market value of each loan note = $(8 \times 5.033) + (126.15 \times 0.547) = 40.26 + 69.00 = \109.26
- 19 **C** An equity beta of greater than 1 indicates that the investment is more risky than the market as a whole.
- 20 **B** It is correct that the price/earnings ratio is more suited to valuing the shares of listed companies, and it is also true that it is difficult to find a suitable price earnings ratio for the valuation.
- 21 **A** Interest payment = 5,000,000 pesos
Six-month forward rate for buying pesos = 12.805 pesos per \$
Dollar cost of peso interest using forward market = $5,000,000/12.805 = \$390,472$
- 22 **B** Exchange rates reflecting the different cost of living between two countries is stated by the theory of purchasing power parity.
The theory holds in the long term rather than the short term.

The forward rate is found by multiplying the spot rate by the ratio of the inflation rates of the two countries.

- 23 **C** Dollars will be borrowed now for six months at $4.5 \times 6/12 = 2.25\%$
 Pesos will be deposited now for six months at $7.5 \times 6/12 = 3.75\%$
- 24 **C** Currency futures and swaps could both be used. As payment must be made on the date set by the bank, leading or lagging are not appropriate. Matching is also inappropriate as there are no peso income streams.
- 25 **A** The correct procedure is to: Borrow euro now, convert the euro into dollars and place the dollars on deposit for three months, use the customer receipt to pay back the euro loan.
- 26 **A** Deregulation to increase competition should mean managers act to reduce costs in order to be competitive. The need to reduce costs may mean that quality of products declines.
- 27 **A** Since taxation and capital allowances are to be ignored, and where relevant all information relating to project 2 has already been adjusted to include future inflation, the correct discount rate to use here is the nominal before-tax weighted average cost of capital of 12%.

	0	1	2	3	4
Maintenance costs		(25,000)	(29,000)	(32,000)	(35,000)
Investment and scrap	<u>(200,000)</u>	<u> </u>	<u> </u>	<u> </u>	<u>25,000</u>
Net cash flow	(200,000)	(25,000)	(29,000)	(32,000)	10,000
Discount at 12%	<u>1.000</u>	<u>0.893</u>	<u>0.797</u>	<u>0.712</u>	<u>0.636</u>
Present values	<u>(200,000)</u>	<u>(22,325)</u>	<u>(23,113)</u>	<u>(22,784)</u>	<u>(6,360)</u>

Present value of cash flows (\$274,582)

Cumulative present value factor 3.037

Equivalent annual cost = $274,582/3.037 = \$90,412$

- 28 **D** Both statements are false. The machine with the lowest equivalent annual cost should be purchased not the present value of future cash flows alone. The lives of the two machines are different and the equivalent annual cost method allows this to be taken into consideration.
- 29 **B** EV of year 3 cash flow = $(23,000 \times 0.2) + (24,000 \times 0.35) + (30,000 \times 0.45) = 26,500$
 PV discounted at 12% = $26,500 \times 0.712 = \$18,868$
- 30 **C** The statement about uncertainty increasing with project life is true.

Section C

Question 31

Marking scheme

	Marks
(a) Inflated income	2
Inflated operating costs	2
Net present value	1
Internal rate of return	3
Return on capital employed	3
	<u>11</u>
(b) Discussion of investment appraisal findings	3
Advice on acceptability of project	1
	<u>4</u>
(c) Maximisation of shareholder wealth	1–2
Conflict from automation of production process	1–2
Conflict from additional noise	1–2
Maximum	<u>5</u>
	<u><u>20</u></u>

(a) (i) Calculation of NPV

Year	0	1	2	3	4
	\$	\$	\$	\$	\$
Investment	(2,000,000)				
Income		1,236,000	1,485,400	2,622,000	1,012,950
Operating costs		676,000	789,372	1,271,227	620,076
Net cash flow	(2,000,000)	560,000	696,028	1,350,773	392,874
Discount at 10%	1.000	0.909	0.826	0.751	0.683
Present values	(2,000,000)	509,040	574,919	1,014,430	268,333
Net present value:	\$366,722				

Workings

Calculation of income

Year	1	2	3	4
Inflated selling price (\$/unit)	20.60	21.22	21.85	22.51
Demand (units/year)	60,000	70,000	120,000	45,000
Income (\$/year)	1,236,000	1,485,400	2,622,000	1,012,950

Calculation of operating costs

Year	1	2	3	4
Inflated variable cost (\$/unit)	8.32	8.65	9.00	9.36
Demand (units/year)	60,000	70,000	120,000	45,000
Variable costs (\$/year)	499,200	605,500	1,080,000	421,200
Inflated fixed costs (\$/year)	176,800	183,872	191,227	198,876
Operating costs (\$/year)	676,000	789,372	1,271,227	620,076

Alternative calculation of operating costs

Year	1	2	3	4
Variables cost (\$/unit)	8	8	8	8
Demand (units/year)	60,000	70,000	120,000	45,000
Variable costs (\$/year)	480,000	560,000	960,000	360,000
Fixed costs (\$/year)	170,000	170,000	170,000	170,000
Operating costs (\$/year)	650,000	730,000	1,130,000	530,000
Inflated costs (\$/year)	676,000	789,568	1,271,096	620,025

(ii) Calculation of internal rate of return

Year	0	1	2	3	4
	\$	\$	\$	\$	\$
Net cash flow	(2,000,000)	560,000	696,028	1,350,773	392,874
Discount at 20%	1.000	0.833	0.694	0.579	0.482
Present values	(2,000,000)	466,480	483,043	782,098	189,365

Net present value: (\$79,014)

$$IRR = a + \frac{NPV_a}{(NPV_a - NPV_b)} (b-a) = 10\% + [(366,722/(366,722 + 79,014)](20 - 10) = 18.2\%$$

(iii) Calculation of return on capital employed

Total cash inflow = 560,000 + 696,028 + 1,350,773 + 392,874 = \$2,999,675

Total depreciation and initial investment are same, as there is no scrap value.

Total accounting profit = 2,999,675 - 2,000,000 = \$999,675

Average annual accounting profit = 999,675/4 = \$249,919

Average investment = 2,000,000/2 = \$1,000,000

Return on capital employed = $100 \times 249,919/1,000,000 = 25\%$

- (b)** The investment proposal has a positive net present value (NPV) of \$366,722 and is therefore financially acceptable. The results of the other investment appraisal methods do not alter this financial acceptability, as the NPV decision rule will always offer the correct investment advice.

The internal rate of return (IRR) method also recommends accepting the investment proposal, since the IRR of 18.2% is greater than the 10% return required by PV Co. If the advice offered by the IRR method differed from that offered by the NPV method, the advice offered by the NPV method would be preferred.

The calculated return on capital employed of 25% is less than the target return of 30%, but as indicated earlier, the investment proposal is financially acceptable as it has a positive NPV. The reason why PV Co has a target return on capital employed of 30% should be investigated. This may be an out-of-date hurdle rate which has not been updated for changed economic circumstances.

- (c)** As a large listed company, PV Co's primary financial objective is assumed to be the maximisation of shareholder wealth. In order to pursue this objective, PV Co should undertake projects, such as this one, which have a positive NPV and generate additional value for shareholders.

However, not all of PV Co's stakeholders have the same objectives and the acceptance of this project may create conflict between the different objectives.

Due to Product W33 being produced using an automated production process, it will not meet employees' objectives of continuity or security in their employment. It could also mean employees will be paid less than they currently earn. If this move is part of a longer-term move away from manual processes, it could also conflict with government objectives of having a low rate of unemployment.

The additional noise created by the production of Product W33 will affect the local community and may conflict with objectives relating to healthy living. This may also conflict with objectives from environmental pressure groups and government standards on noise levels as well.

Question 32

Marking scheme

		Marks
(a)	Dividend growth rate	1
	Share price using dividend growth model	2
	Capital gearing	2
	Weighted average cost of capital	2
		<u>7</u>
(b)	Dividend irrelevance	3–4
	Dividend relevance	3–4
		Maximum
(c)		8
	Discussion of equity	1–2
	Debt and recognising business risk is not relevant	1–2
	Time until maturity of bonds	1–2
	Different value of bonds	1
		Maximum
		5
		<u>20</u>

- (a) (i) Dividend growth rate = $100 \times ((52/50) - 1) = 100 \times (1.04 - 1) = 4\%$ per year
 Share price using DGM = $(50 \times 1.04)/(0.124 - 0.04) = 52/0.84 = \6.19 or \$6.19
- (ii) Number of ordinary shares = 25 million
 Market value of equity = $25m \times 6.19 = \$154.75$ million
 Market value of Bond A issue = $20m \times 95.08/100 = \$19.016m$
 Market value of Bond B issue = $10m \times 102.01/100 = \$10.201m$
 Market value of debt = \$29.217m
 Market value of capital employed = $154.75m + 29.217m = \$183.967m$
 Capital gearing = $100 \times 29.217/183.967 = 15.9\%$
- (iii) WACC = $((12.4 \times 154.75) + (9.83 \times 19.016) + (7.82 \times 10.201))/183.967 = 11.9\%$
- (b) Miller and Modigliani showed that, in a perfect capital market, the value of a company depended on its investment decision alone, and not on its dividend or financing decisions. In such a market, a change in dividend policy by DD Co would not affect its share price or its market capitalisation. They showed that the value of a company was maximised if it invested in all projects with a positive net present value (its optimal investment schedule). The company could pay any level of dividend and if it had insufficient finance, make up the shortfall by issuing new equity. Since investors had perfect information, they were indifferent between dividends and capital gains. Shareholders who were unhappy with the level of dividend declared by a company could gain a 'home-made dividend' by selling some of their shares. This was possible since there are no transaction costs in a perfect capital market.
- Against this view are several arguments for a link between dividend policy and share prices. For example, it has been argued that investors prefer certain dividends now rather than uncertain capital gains in the future (the 'bird-in-the-hand' argument).
- It has also been argued that real-world capital markets are not perfect, but semi-strong form efficient. Since perfect information is therefore not available, it is possible for information asymmetry to exist between shareholders and the managers of a company. Dividend announcements may give new information to shareholders and as a result, in a semi-strong form efficient market, share prices may change. The size and direction of the share price change will depend on the difference between the dividend announcement and the expectations of shareholders. This is referred to as the 'signalling properties of dividends'.

It has been found that shareholders are attracted to particular companies as a result of being satisfied by their dividend policies. This is referred to as the 'clientele effect'. A company with an established dividend policy is therefore likely to have an established dividend clientele. The existence of this dividend clientele implies that the share price may change if there is a change in the dividend policy of the company, as shareholders sell their shares in order to reinvest in another company with a more satisfactory dividend policy. In a perfect capital market, the existence of dividend clienteles is irrelevant, since substituting one company for another will not incur any transaction costs. Since real-world capital markets are not perfect, however, the existence of dividend clienteles suggests that if DD Co changes its dividend policy, its share price could be affected.

- (c) There is a trade-off between risk and return on DD's capital instruments. Investors in riskier assets require a higher return in compensation for this additional risk. In the case of ordinary shares, investors rank behind all other sources of finance in the event of a liquidation so are the most risky capital instrument to invest in. This is partly why DD Co's cost of equity is more expensive than its debt financing.

Similarly for debt financing, higher-risk borrowers must pay higher rates of interest on their borrowing to compensate lenders for the greater risk involved. DD Co has two bonds, with Bond A having the higher interest rate and therefore the higher risk. Since both bonds were issued at the same time, business risk is not a factor in the higher level of risk.

Instead, this additional risk is likely to be due to the fact that Bond A has a greater time until maturity, meaning that its cash flows are more uncertain than Bond B. In particular where interest rates are expected to increase in the future, longer-term debt will have a higher rate of interest to compensate investors for investing for a longer period.

A further factor is that the total nominal value (book value) of Bond A is twice as large as Bond B and therefore may be perceived to be riskier.

Mathematical tables

Formulae Sheet

Economic order quantity

$$= \sqrt{\frac{2C_0 D}{C_h}}$$

Miller–Orr Model

Return point = Lower limit + ($\frac{1}{3} \times$ spread)

$$\text{Spread} = 3 \left[\frac{\frac{3}{4} \times \text{transaction cost} \times \text{variance of cash flows}}{\text{interest rate}} \right]^{\frac{1}{3}}$$

The Capital Asset Pricing Model

$$E(r_i) = R_f + \beta_i (E(r_m) - R_f)$$

The asset beta formula

$$\beta_a = \left[\frac{V_e}{(V_e + V_d(1-T))} \beta_e \right] + \left[\frac{V_d(1-T)}{(V_e + V_d(1-T))} \beta_d \right]$$

The Growth Model

$$P_0 = \frac{D_0(1+g)}{(r_e - g)}$$

Gordon's growth approximation

$$g = b r_e$$

The weighted average cost of capital

$$WACC = \left[\frac{V_e}{V_e + V_d} \right] k_e + \left[\frac{V_d}{V_e + V_d} \right] k_d (1-T)$$

The Fisher formula

$$(1+i) = (1+r)(1+h)$$

Purchasing power parity and interest rate parity

$$S_1 = S_0 \times \frac{(1+h_c)}{(1+h_b)} \quad F_0 = S_0 \times \frac{(1+i_c)}{(1+i_b)}$$

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate
 n = number of periods until payment

Periods (n)	Discount rate (r)									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1 - (1 + r)^{-n}}{r}$

Where r = discount rate
 n = number of periods

Periods (n)	Discount rate (r)									
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675

Review Form – Paper F9 Financial Management (02/16)

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