2019 EXAMINATIONS

Lancaster University

PART II (SECOND AND FINAL YEAR)

ACCOUNTING AND FINANCE

AcF 302 ADVANCED CORPORATE FINANCE

(2 HOURS PLUS 15 MINUTES READING TIME)

Answer **ALL** questions from Section A on the multiple-choice answer sheet provided.

Answer **ONE** question from Section B. Answer **ONE** question from Section C.

Answer Section B and Section C in separate answer booklets.

A list of important formulae is included at the end of the examination paper.

The use of standard calculators with scientific, and standard arithmetic and statistical functions, is permitted.

Section A

Section A consists of Questions 1 to 10. Answer **ALL** questions on the MCQ Paper provided.

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1) Which of the following statements about a company's cost of capital is TRUE?

A) The equity cost of capital exceeds the unlevered cost of capital because leverage makes the equity risk less than the overall risk of the firm. The WACC is less than the unlevered cost of capital because the WACC excludes the benefit of the interest tax shield.
B) The equity cost of capital exceeds the unlevered cost of capital because leverage makes the equity risk greater than the overall risk of firm. The WACC is less than the unlevered cost of capital because the WACC includes the benefit of the interest tax shield.
C) The equity cost of capital exceeds the unlevered cost of capital because leverage makes the equity risk less than the overall risk of the firm. The WACC is less than the unlevered cost of capital because the WACC includes the benefit of the interest tax shield.
D) The equity cost of capital exceeds the unlevered cost of capital because leverage makes the equity risk greater than the overall risk of the firm. The WACC is less than the unlevered cost of capital because the WACC excludes the benefit of the interest tax shield.

2) The factors to consider when evaluating a real option to delay an investment include all of the following EXCEPT:

A) The company's stock price.
B) The upfront investment that is required.
C) The volatility of the asset's value.
D) The free cash flow that is lost from the delay.

3) In an IPO, an option that allows the underwriter to issue more stock at the IPO offer price is known as:

A) red herring.
B) under-allotment allocation.
C) indenture.
D) green shoe provision.

4) When a holder of a _____ exercises it and thereby purchases stock, the company delivers this stock by issuing new stock.

A) call option.
B) put option.
C) warrant.
D) callable bond.

5) Which of the following statements about IPO puzzles is FALSE?

A) On average, IPOs appear to be underpriced: the price at the end of trading on the first day is often substantially lower than the IPO price.
B) It appears that the number of IPOs is not solely driven by the demand for capital.
C) One possible explanation to the high cost of IPOs is that by charging lower fees, an underwriter may risk signaling that it is not the same quality as its higher priced competitors.
D) Newly listed firms subsequently appear to perform relatively poorly for 3 to 5 years following their IPOs.

6) Which of the following statements is FALSE?

A) If a company anticipates an ongoing surplus of cash, it may choose to increase its dividend payout.
B) Seasonal sales can create large short-term cash flow deficits and surpluses.
C) The first step in short-term financial planning is to forecast the company's future net working capital.
D) Deficits resulting from investments in long-term projects are often financed using long-term sources of capital, such as equity or long-term bonds.

7) A written, legally binding agreement that obliges the bank to lend a firm any amount up to a stated maximum, regardless of the financial condition of the firm (unless the firm is bankrupt) as long as the firm satisfies any restrictions in the agreement is called:

A) a bridge loan.
B) a single, end-of-period-payment loan.
C) a short-term mortgage loan.
D) a committed line of credit.

8) Which of the following statements is FALSE?

A) The matching principle indicates that the firm should finance permanent working capital with short-term sources of funds.
B) Following the matching principle should, in the long run, help minimize a firm's transaction costs.
C) In a perfect capital market, the choice of financing is irrelevant; thus, how the firm chooses to finance its short-term cash needs cannot affect value.
D) A portion of a firm's investment in its accounts receivable and inventory is temporary and results from seasonal fluctuations in the firm's business or unanticipated shocks.

9) Which of the following statements regarding monopoly mergers is FALSE?

A) It is often argued that merging with or acquiring a major rival enables a firm to substantially reduce competition within the industry and thereby increase profits.
B) Financial researchers have found that the share prices of other firms in the same industry did not significantly increase following the announcement of a merger within the industry.
C) While only the merging company benefits when competition is reduced, all companies in an industry pay the associated costs.
D) Society as a whole bears the cost of monopoly strategies, so most countries have antitrust laws that limit such activity.

10) Which of the following is NOT a direct action that can be taken by shareholders?

A) Submitting shareholder resolutions directing the board to take specific actions.
B) Withholding votes for the board of directors candidates.
C) Initiating a proxy contest.
D) Voting to remove the management team.

(3 marks for each question)

(Total 30 marks)

Section B

Answer **EITHER** Question 11 **OR** Question 12.

Answer all parts of the chosen question.

Question 11

a) Somid plc has an equity cost of capital of 14% and a debt cost of capital of 5%, and the firm maintains a debt-equity ratio of 1. Somid is considering a project that will contribute £4.5 million in free cash flows the first year, growing by 3% per year thereafter. The project will cost £50 million and will be financed with £30 million in new debt initially with a constant debt-equity ratio maintained thereafter. Somid's corporate tax rate is 40%; the tax rate on interest income is 40%; and the tax rate on equity income is 20%.

REQUIRED:

I. Calculate Somid's Weighted Average Cost of Capital (WACC) and unlevered cost of capital.

(5 marks)

II. Calculate the Net Present Value (NPV) of the project using the Adjusted Present Value (APV) method.

(9 marks)

b) You are the chief financial officer (CFO) of a publicly listed company in the pharmaceutical sector. Your company is considering the acquisition of a private competitor in the same industry. Discuss the steps you would take to value the target company. Note: Your discussion should be based on the steps covered in the case-study lecture. You are not required to provide any numerical analysis.

(12 marks)

c) Kimia Technologies plc has raised £12 million in a Series A round with £40 million post-money value and a 1.5x liquidation preference, and £27 million in a Series B round with a £72 million post-money value and a 3x liquidation preference plus seniority over Series A.

REQUIRED:

I. What will Series A, Series B, and common shareholders receive if Kimia is sold for £84 million?

(3 marks)

II. What will Series A, Series B, and common shareholders receive if Kimia is sold for £100 million?

(3 marks)

III. What will Series A, Series B, and common shareholders receive if Kimia is sold for £300 million?

(3 marks)

(Total 35 marks)

Question 12

a) Last year, Pharco Optics asked an engineering firm to design a new machine for them that they can use in their production process. The firm has produced two designs. The cheaper design will cost £9 million to implement and last 4 years. The more expensive design will cost £17 million and last 8 years. Both designs are expected to save Pharco £4 million per year. Pharco's cost of capital is 10%.

REQUIRED:

I. Assuming that the shorter-lived machine cannot be replaced at the end of its life, which design should Pharco choose?

(3 marks)

II. Suppose that Pharco can replace the shorter-lived machine in 4 years' time with a similar machine, and that the cost of the machine in 4 years' time is equally likely to rise to £14 million, stay equal to £9 million, or fall to £6 million, and suppose this risk is idiosyncratic and does not change the project's cost of capital. Which design should Pharco choose?

(7 marks)

III. Explain why your answer in part (ii) might be different from part (i).

(2 marks)

b) Venture capitalists usually receive convertible preferred stock when they invest in private firms. Describe the typical features of these securities (i.e., the venture capital financing terms).

(10 marks)

c) Explain what a bond covenant is and provide examples. How can a bond covenant reduce a firm's borrowing cost?

(6 marks)

d) Pyramids plc expects free cash flows this year of £8.2 million and a future growth rate of 3% per year. The firm currently has £32 million in debt outstanding. This leverage will remain fixed during the year, but at the end of each year Pyramids will increase or decrease its debt to maintain a constant debt-equity ratio. Pyramids pays 4% interest on its debt, pays a corporation tax rate of 40%, and has an equity cost of capital of 11%. What is Pyramids' value with this leverage policy?

(7 marks)

(Total 35 marks)

Section C

Answer **EITHER** Question 13 **OR** Question 14.

Answer all parts of the chosen question.

Question 13

a) You are the CFO of a food manufacturing company that is considering the purchase of a new tetra-brik packaging machine costing a total of £6.5 million. This machine will qualify for accelerated depreciation for the tax purposes: 32% can be expensed immediately, followed by 20%, 19.2%, 11.52%, 11.52% and 5.76% over the next five years. However, because of the company's substantial tax loss carry forwards, you estimate its marginal tax rate to be only 12% over the next five years. Since the company will get very little tax benefit from the depreciation expense, you are also considering leasing the packaging machine instead. Suppose that the food company and the lessor face the same 3.2% borrowing rate. Assume that the packaging machine is worthless after five years, the lease term is five years, and a lease would qualify as a true tax lease.

REQUIRED

I. Assuming that your company's annual lease payments are £1 million, calculate the lease-equivalent loan (show all your calculations, including the computation of the FCF (buy) and the FCF (Lease)).

(8 marks)

II. What is the amount of the savings in year 0 from leasing?

(2 marks)

III. Using the direct method, calculate the NPV of leasing.

(3 marks)

IV. What should you do as CFO of this food company, lease or buy the tetra-brick packaging machine?

(2 marks)

b) Explain how tax savings from operating losses can sometimes be used as a motivation for a merger.

(2 marks)

c) Consider two firms, North Corporation and South Company. Both corporations will either make £20,000 or lose £5,000 every year with equal probability. The firms' profits are perfectly negatively correlated. The corporate tax rate is 35%.

REQUIRED

I. What are the total expected after-tax profits of both firms when they are two separate firms, assuming no tax-loss carryforwards or carrybacks?

(2 marks)

II. Calculate the expected earnings if the two companies are run as a combined (merged) entity.

(2 marks)

III. Assume positively correlated profits between firms. Calculate the total earnings if they are run separately.

(2 marks)

IV. Calculate the total earnings if they are merged when they have positively correlated profits.

(2 marks)

d) Define the following five concepts related to corporate governance and anti-takeover defences.

I. Poison pill.

(2 marks)

II. Golden parachute.

(2 marks)

III. White knight.

(2 marks)

IV. Classified board of directors.

(2 marks)

V. Captured board of directors.

(2 marks)

(Total 35 marks)

Question 14

a) You work for a leveraged buyout firm and are evaluating a potential buyout of InstaBram. InstaBram's stock price is £14, and it has 9 million shares outstanding. You believe that if you buy the company and replace its management, its value will increase by 50%. You are planning on doing a leveraged buyout of InstaBram, and will offer £21 per share for control of the company.

REQUIRED

I. Assuming you get 50% control of InstaBram, calculate the price of the non-tendered shares.

(5 marks)

II. Regarding the tender offer, explain whether shareholders should tender their shares?

(5 marks)

III. Assuming you get 50% control of InstaBram, calculate your gain from this transaction.

(4 marks)

b) Explain temporary working capital and permanent working capital.

(6 marks)

c) Wyatt Oil purchases goods from its suppliers on terms 3/20 net 40. Calculate the effective annual cost to Wyatt Oil if they do not take the discount and pay on day 40.

(3 marks)

d) Your firm purchases goods from its supplier on terms of 1/10, net 30. Calculate the effective annual cost to your firm if it chooses not to take advantage of the trade discount offered and stretches the accounts payable to 45 days.

(3 marks)

e) Define a lease and specify the rights and obligations of each party to the lease.

(3 marks)

f) Distinguish between a sales-type lease, a direct lease, and a sale and lease-back. Provide examples.

(6 marks)

(Total 35 marks)

END OF PAPER

Formula Sheet

Present value of a perpetuity

$$PV = \frac{C}{r}$$

Present value of a growing perpetuity

$$PV = \frac{C_1}{r - g}$$

Present value of an annuity

$$PV = \frac{C}{r}\left(1 - \frac{1}{(1+r)^T}\right)$$

Present value of an annuity due

$$PV = C\left(1 + \frac{1}{r}\left(1 - \frac{1}{(1+r)^{T-1}}\right)\right)$$

Effective annual rate

$$EAR = \left(1 + \frac{i}{m}\right)^m - 1$$

Weighted Average Cost of Capital

$$r_{wacc} = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D (1 - \tau_c)$$

Project-based WACC

$$r_{wacc} = r_U - d\tau_c r_D$$

Project-based WACC with Annual Debt Adjustment

$$r_{wacc} = r_U - d\tau_c r_D \frac{1 + r_U}{1 + r_D}$$

Unlevered Cost of Capital

$$r_U = \frac{E}{E+D} r_E + \frac{D}{E+D} r_D$$

Cost of Equity

$$r_E = r_U + \frac{D}{E}(r_U - r_D)$$

Debt Capacity

$$D_t = d \times V_t^L$$

Adjusted Present Value

$$V^L = APV = V^U + PV(\text{Interest Tax Shield})$$

Free Cash Flow to Equity

$$FCFE = FCF - (1 - \tau_c) \times (\text{Interest Payments}) + (\text{Net Borrowing})$$

Free Cash Flow

$$FCF = EBIT(1 - \tau_c) + Depreciation - Capex - \Delta NWC$$

Levered Value with a Constant Interest Coverage Ratio

$$V_L = (1 + \tau_c k)V_U$$

Annually Adjusted Debt

$$PV(\tau_c \times Int_t) = \frac{\tau_c \times Int_t}{(1 + r_U)^{t-1}(1 + r_D)} = \frac{\tau_c \times Int_t}{(1 + r_U)^t} \times \left(\frac{1 + r_U}{1 + r_D}\right)$$

$$r_{wacc} = r_U - d\,\tau_c\, r_D \frac{1 + r_U}{1 + r_D}$$

Personal Taxes

$$\tau^* = 1 - \frac{(1 - \tau_c)(1 - \tau_e)}{(1 - \tau_i)}$$

$$r_D^* \equiv r_D \frac{(1 - \tau_i)}{(1 - \tau_e)}$$

Unlevered Cost of Capital (CAPM)

$$r_U = r_f + \beta_U(E[R_{mkt}] - r_f)$$

Black-Scholes Formula

$$C = S^x N(d_1) - PV(K)N(d_2)$$

$$d_1 = \frac{\ln[S^x/PV(K)]}{\sigma\sqrt{T}} + \frac{\sigma\sqrt{T}}{2}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

Failure Cost Index

$$\text{FCI} = \frac{1 - PV(\text{success})}{PV(\text{investment})}$$

Leasing

PV(Lease payments) = Price of the Asset – PV(residual value of the asset)

$FCF(Buy)_t$ = - $CapEx_t$ + $Depreciation\ tax\ shield_t$

$FCF(Lease)_t$= - $Lease\ payments_t$ + $Income\ tax\ savings_t$

$Incremental\ free\ cash\ flow_t$ = FCF (Lease – Buy)$_t$ = $FCF(Lease)_t$ – $FCF(Buy)_t$

Lease equivalent loan = PV ($FCF(Lease - Buy)_1$ + …+ $FCF(Lease - Buy)_T$)

Valuation and the takeover process

Amount Paid = Target's Pre-Bid Market Cap. + Acquisition Premium

Value Acquired = Target stand alone value + PV(Synergies)

$$Exchange\ ratio = \frac{x}{N_T} < \frac{P_T}{P_A}\left(1 + \frac{S}{T}\right)$$