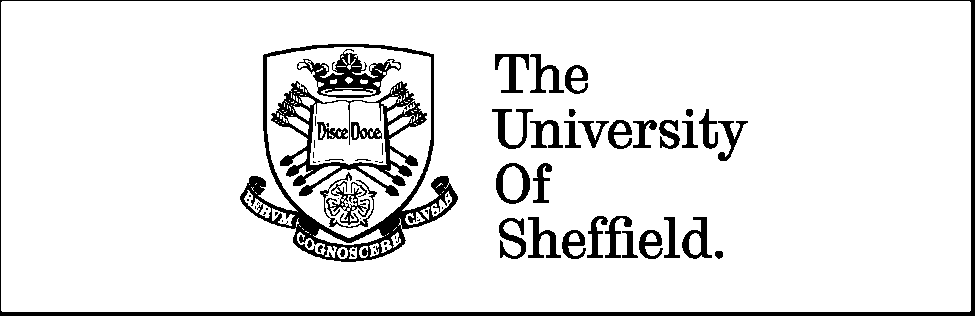
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**MGT388**

**MANAGEMENT SCHOOL Autumn Semester 2015-2016**

**Finance and Law for Engineers 1 Hour 30 minutes**

**Answer TWO questions only from three**

**All questions carry equal marks**

**Questions start from page two onwards**

**Present value table attached**

**Question One**

A friend left University a few years ago and has approached you to buy shares worth £50,000 in a company that was started on 1 January 2014. The business venture is in your field of expertise.

The friend has supplied you with the latest set of accounts and has informed you that the business is successful with exceptional margins and is expanding rapidly. The business has patented a new material which provides the company with a competitive advantage within the industry. The current share capital is equally owned by your friend and two others. All three work within the business and have an equal say in the running of the business.

If you accept the offer, you will join on the same terms as the other shareholders, working within the business and having an equal say in the operation of the business.

**Statement of Financial Position for New Venture Ltd as at:**

**31 December 2015 31 December 2014**

**ASSETS £ £**

***Non-Current Assets***

Property, plant and equipment 272,220 215,250

Patents 40,050 40,050

312,270 255,300

***Current assets***

Inventories 39,150 17,550

Trade receivables 66,690 36,180

Cash 0 5,940

105,840 59,670

**TOTAL ASSETS** 418,110 314,970

**EQUITY AND LIABILITIES**

***Equity***

Share capital 150,000 150,000

Retained earnings 123,391 89,910

273,391 239,910

***Non-current Liabilities***

Loans 108,000 56,700

***Current Liabilities***

Trade payables 26,730 18,360

Overdraft 9,989 0

36,719 18,360

**TOTAL EQUITY AND LIABILITIES** 418,110 314,970

**Question 1 continued**

**Income Statement for New Venture Ltd for:**

**31 December 2015 31 December 2014**

**£ £**

Revenue 386,100 275,940

Cost of sales (120,440) (105,280)

Gross profit 265,660 170,660

Administration expenses (29,980) (26,740)

Distribution costs (42,660) (27,000)

Operating profit 193,020 116,920

Finance costs (30,600) (8,100)

Profit before tax 162,420 108,820

Taxation (7,200) (18,910)

Profit for the year 155,220 89,910

A dividend of £121,739 was paid in respect of the year end 31 December 2015, £40,580 to each Director. No dividend was paid in the year ended 31 December 2014.

**REQUIRED**

1. Define the terms “asset” and “liability”. **(9 marks)**
2. Briefly explain your position as a substantial shareholder in the business in terms of rights and risks **(8 marks)**
3. Explain using the accruals concept how it is possible that New Venture Ltd can be profitable and yet be short of cash and needed to take on more loans and an overdraft during 2015. **(10 marks)**
4. Using the above information calculate the following ratios for the years ending 31 December 2014 and 2015:

Return on capital employed

Gross profit margin

Operating profit margin

Asset turnover **(12 marks)**

1. Explain using the ratios calculated and any other information you consider relevant whether you will invest in New Venture. **(11 marks)**

**Total 50 marks**

**Question Two**

McCaw Ltd has been manufacturing toys for a number of years. The company has been growing and the Directors of the company have recently appointed a management accountant for the first time. The management accountant is shocked to find that there is no system of costing and the price of products is determined on an arbitrary basis. As a matter of urgency the management accountant seeks to put in place an absorption costing system to calculate a product cost and determine an appropriate product price.

A division of the company produces two products, remote controlled planes and cars and has a canteen which is used by the employees of both production departments.

The management accountant discovers the following:

Each plane requires £15.00 of direct materials, and 2 direct labour hours at £9.50 per direct labour hour with other direct expenses amounting to £3.50 per plane. For the period under review 1,852 planes will be produced.

Each car requires £12.00 of direct materials and requires 1.5 hours of direct labour at a rate of £9.50 per direct labour hour with other direct expenses amounting to £2.80 per car. For the period under review 2,360 cars will be produced.

The direct canteen costs were £20,000 and the production overheads were:

£

Rent 55,000

Repairs and maintenance 18,000

The management accountant has collected the following data to help in the apportionment of overheads:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Remote controlled planes | Remote controlled cars | Canteen | Total |
| Area (square metres) | 8,000 | 10,000 | 2,000 | 20,000 |
| Number of call-outs | 75 | 85 | 20 | 180 |
| Number of employees | 30 | 20 | 5 | 55 |

**Question 2 continued**

**REQUIRED**

1. Define the terms product cost, direct costs and indirect costs. **(9 marks)**
2. Calculate the prime cost (the direct costs) for both remote controlled planes and cars. **(6 marks)**
3. Calculate the product cost for both remote controlled planes and cars using units of production as the basis of overhead absorption.

**(25 marks)**

1. The toy market is characterised by large number of buyers and sellers so it is likely the price McCaw Ltd can obtain for its products is determined by the market.

Explain the pricing mechanism and how market prices are determined. **(10 marks)**

**Total 50 marks**

**Question Three**

Alternative Transport Ltd is a company that currently produces segways, skateboards, and bikes.

The management accountant has calculated the total cost of a segway, a skateboard and a bike:

Segway Skateboard Bike

£ £ £

Direct materials (variable) 25.00 12.50 55.00

Direct labour (variable) 14.00 7.50 40.00

Direct expenses (variable) 5.00 3.00 15.00

Share of fixed overheads 13.00 6.00 26.00

Total cost 57.00 29.00 136.00

Currently Alternative Transport Ltd produces 2,000 segways with the current retail price being £65. 1,000 skateboards are manufactured each month at a retail price of £40 and 500 bikes are produced which are sold for £142.

Alternative Transport Ltd is operating at full capacity except for the segways division where the facilities would allow for the production of another 500 segways.

As a long term project the directors of Alternative Transport Ltd are considering developing land in Nottingham as a park where people can come and hire their segways, skateboards and bikes. The initial cost of acquiring and developing the land is estimated to be £600,000 following this the Directors expect the park will generate revenues and cost as follows:

Revenues Costs

£ £

Year 1 150,000 30,000

Year 2 200,000 20,000

Year 3 200,000 20,000

Year 4 250,000 10,000

Year 5 200,000 40,000

The cost of capital for Alternative transport Ltd is 8%.

**Question 3 continued**

**REQUIRED**

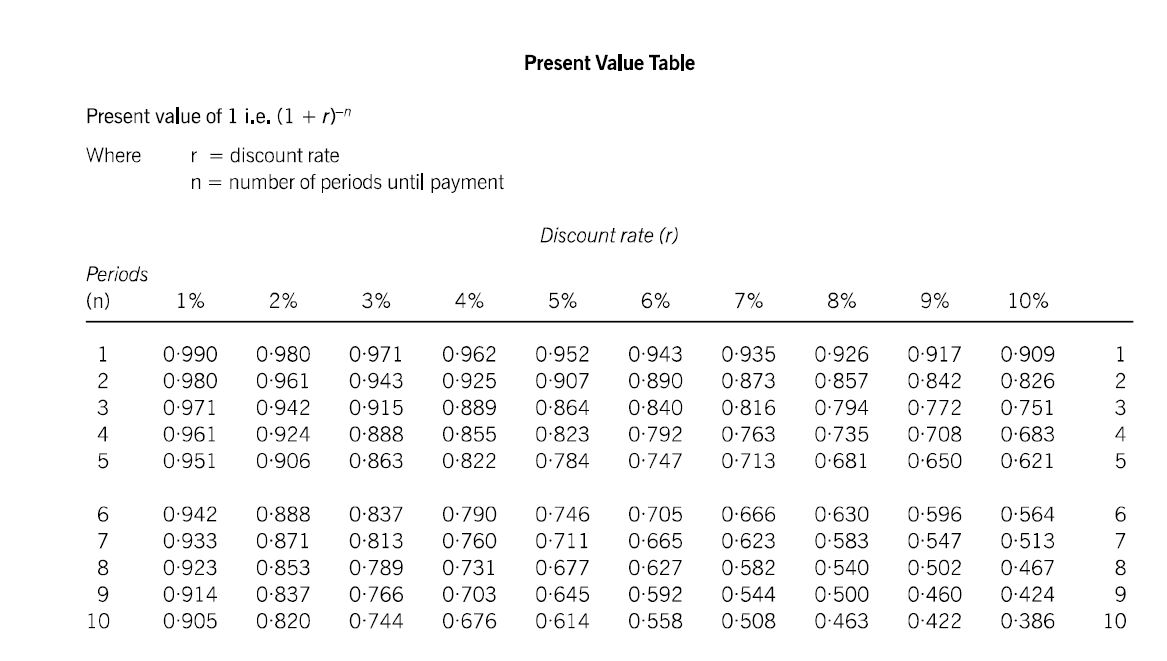
1. Define contribution and explain why it is important to consider a product’s contribution in short term decision making. **(6 marks)**
2. Calculate the contribution for segways, skateboards and bikes **(6 marks)**
3. Alternative Transport Ltd receives an order for 300 segways at a price of £49. State whether the directors of Alternative Transport should accept the order. In your answer you should prepare calculations to consider the total profitability of the business and comment on any other factors you consider relevant. **(15 marks)**
4. Explain how your answer in part (c) would change if the directors could divert ALL the spare capacity within the segway division to the production of 100 skateboards selling at the full retail price of £40 **(5 marks)**
5. Explain what is meant by the terms “net present value” and “payback period”

**(6 marks)**

1. Calculate the net present value and payback period for the Park project and advise the directors as to whether to take on the project **(12 marks)**

**Total 50 marks**

**END OF QUESTION PAPER**

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