UNIVERSITY OF CAMBRIDGE
Registrary's Office

Dr James Knapton
Information Compliance Officer

Peter Seth
By email

Reference: FOI-2018-410

5 July 2018

Dear Mr Seth,

Your request was received on 25 June 2018 and I am dealing with it under the terms of the Freedom of Information Act 2000 ('the Act'). You asked:

> *Could you please release all the exam papers which students of MPhil in Management sat in the academic year of 2016-2017 and 2017-2018?*

The requested information is attached. Please note that the attached document should not be copied, reproduced or used except in accordance with the law of copyright.

If you are unhappy with the service you have received in relation to your request and wish to make a complaint or request an internal review of this decision, you should contact us quoting the reference number above. The University would normally expect to receive your request for an internal review within 40 working days of the date of this letter and reserves the right not to review a decision where there has been undue delay in raising a complaint. If you are not content with the outcome of your review, you may apply directly to the Information Commissioner for a decision. Generally, the Information Commissioner cannot make a decision unless you have exhausted the complaints procedure provided by the University. The Information Commissioner may be contacted at: The Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF (https://ico.org.uk/).

Yours sincerely,

James Knapton

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UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Wednesday 11 January 2017 14:00 to 16:00

Paper MM1

Quantitative Techniques for Management

You must answer all questions.

You have two hours to complete the test including 10 minutes for reading.

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

Each of five test questions is worth 20 marks out of 100.

N.B. THE FINAL TWO SHEETS OF THIS PAPER ARE SPECIAL DATA SHEETS

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Approved calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

1 *(a)* A car manufacturer in Birmingham has two similar factories. There is some disagreement, because people working in each factory think that those in the other factory get different salaries. A sample of wages was taken from each factory with the data in the table below:

Factory	Sample size	Mean	Standard deviation
1	49	£25,000	£4,500
2	49	£23,000	£4,000

(i) At 10% significance level, what can you say about the disagreement? Conduct a formal hypothesis testing to support conclusion answer.

(20 marks)

2 *(a)* The management of Holiday Lodge, in Lake District, wants to understand demand for fully paid advance bookings. They believe that the number of fully paid advance bookings depends on the ``Number of quotes'' given via its internet booking system, and the ``Competitive price'' of rooms. The ``Competitive price'' is the average of the price, in pounds, of quotes given by ten local hotels that compete for customers with Holiday Lodge. Holiday Lodge uses a revenue management system that sets the price of a room depending on both the number of unfilled rooms and the competitive price, at the time of an advance quote.

You are given 194 days of data for single room bookings. The price data available to you is restricted to the competitive price for single rooms on each day of the data set, not the competitive price that was used to give an advance price quote on any earlier day. The regression analysis for fully paid advance bookings is shown in the table below.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.846
R Square	0.716
Adjusted R Square	0.713
Standard Error	7.757
Observations	194

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	28974.504	14487.252	240.747	0.000
Residual	191	11493.667	60.176		
Total	193	40468.170			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	25.344	4.888	5.185	0.000	15.702	34.986
Number of quotes	0.086	0.007	13.258	0.000	0.073	0.099
Competitive price	0.156	0.095	1.635	0.104	-0.032	0.344

(i) Specify the regression equation and explain the variables and parameters in the equation.

(ii) With a 95% confidence level, what range of bookings would you expect for a particular day when there are 1000 price quotes and the competitive price on that day is £66? How would you present your result to Holiday Lodge?

(iii) Based on the regression equation, what would be the range of values for the change of the number of bookings if `Number of quotes' is increased by 10?

(TURNOVER)

(iv) How comfortable are you with the regression model summarised in the table? How would you explain to Holiday Lodge whether the model should be trusted or whether there are deficiencies in the model and what might need to be considered to rectify these?

(v) For the independent variable ``Competitive price'', explain the following columns in the regression Summary Output and their relationship: *Standard Error, t Stat, P-value, Lower 95%, Upper 95%*?

(20 marks)

3 *(a)* Suppose you want to estimate the value of a project using Monte Carlo simulation. List the main steps of conducting Monte Carlo simulation and describe the purpose of each step.

(b) Define the flaw of averages and illustrate it with a business example.

(c) Consider two assets *X* and *Y* which have uncertain outcomes and assume their correlation coefficient is *r*.

(i) Construct a portfolio *Z* based on assets *X* and *Y*. Describe how the risk (e.g., variance) of portfolio *Z* changes in change of the correlation coefficient *r*.

(ii) For asset *X*, give and explain two risk measures other than variance and standard deviation.

(20 marks)

(TURNOVER)

4 *(a)* CamLap manufactures 4 models of high quality laptop computers: A, B, C and D. Each of these has four stages in manufacturing: pre-assembly, assembly, post-assembly, and finishing. The table below shows the hours needed per unit for each stage:

	Model A	Model B	Model C	Model D
Pre-assembly	2	3	4	4
Assembly	1	2	2	3
Post-assembly	3	3	2	4
Finishing	2	3	3	3

CamLap has 10, 6, 12 and 8 machines for pre-assembly, assembly, post-assembly and finishing, respectively. Each week, the numbers of hours for each of these 36 machines are 40 (pre-assembly), 36 (assembly), 38 (post-assembly) and 40 (finishing), respectively. Each week, the machines must undergo maintenance and the percentages of time for maintenance for these machines are 10% (pre-assembly), 15% (assembly), 25% (post-assembly) and 10% (finishing). The unit costs for producing laptop computers are £1,600 (Model A), £1,800 (Model B), £2,200 (Model C) and £2,500 (Model D). Based on the market analysis, the unit prices for laptop computers are £2,500 (Model A), £2,800 (Model B), £3,400 (Model C), and £4,000 (Model D). Furthermore, the fixed yearly cost of production for CamLap is £3,000,000. Laptops of Model D are very expensive and this has a maximum yearly demand of 2,000 although CamLap can sell as many as they produce for Models A, B and C.

(i) CamLap wants a production plan for the forthcoming year, which has 52 weeks. Formulate this problem as a linear program for maximising the profit for CamLap.

(ii) Suppose the linear program that you formulate in (*i*) is solved by Solver, an Excel add-in. Describe how the optimal solution and optimal objective function value change when either an objective function coefficient or the right-hand side of a constraint changes.

(20 marks)

5 *(a)* An oil firm decides whether to drill for oil at a particular site in the Indian Ocean. The cost to drill at this site is £300,000. With no other information, the firm believes that there is a chance of p that the selected site actually contains oil. The estimated value will be £1,800,000 if oil is found. Before drilling, the firm can conduct a geological survey for £30,000. The survey may provide strong evidence that there is oil or strong evidence that the site does not contain oil. Past history indicates that when there really is oil, the survey is correct 90% of the time; when there is no oil, the survey is correct 80% of the time. Assume that this oil firm wishes to maximise its expected net profit.

Define a few stochastic events: A = "The site contains oil", B = "The site does not contain oil", X = "The survey indicates there is oil at the site", Y = "The survey indicates there is no oil at the site".

(i) Assume $p = 0.5$. Determine the optimal strategy through the use of a decision tree when the firm does not use the survey.

(ii) Assume $p = 0.5$. Compute and interpret the expected value of perfect information (EVPI) in this decision problem.

(iii) Assume the firm considers whether or not to use the survey information, draw a decision tree and show payoff values on leaf nodes.

(20 marks)

END OF PAPER

(TURNOVER)

SPECIAL DATA SHEET 1
Formula sheet

Standard errors

$$STEM = \frac{\sigma}{\sqrt{n}} \approx \frac{s}{\sqrt{n}}, \quad STEP = \sqrt{\frac{p(1-p)}{n}} \approx \sqrt{\frac{q(1-q)}{n}},$$

$$STEDM = \sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2}} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}.$$

Covariance, Correlation and Regression

Consider data pairs (X_1, Y_1), (X_2, Y_2), …, (X_n, Y_n).
Let m_X and m_Y denote the respective means of the X and Y data.
Let s_X and s_Y denote the respective standard deviations of the X and Y data.
Covariance between X and Y is given by

$$\mathrm{cov}(\mathrm{X}, \mathrm{Y}) = \frac{\sum_{i=1}^{n} (\mathrm{X}_i - m_\mathrm{X})(\mathrm{Y}_i - m_\mathrm{Y})}{n} = \frac{\sum_{i=1}^{n} \mathrm{X}_i \mathrm{Y}_i}{n} - m_\mathrm{X} m_\mathrm{Y}$$

The correlation coefficient between X and Y is given by

$$\mathrm{correl}(\mathrm{X}, \mathrm{Y}) = r = \frac{\mathrm{cov}(\mathrm{X}, \mathrm{Y})}{s_\mathrm{X} s_\mathrm{Y}}.$$

The line of best fit is given by

$$\mathrm{Y} - m_\mathrm{Y} = \frac{r s_\mathrm{Y}}{s_\mathrm{X}} (\mathrm{X} - m_\mathrm{X}).$$

Variance of a portfolio

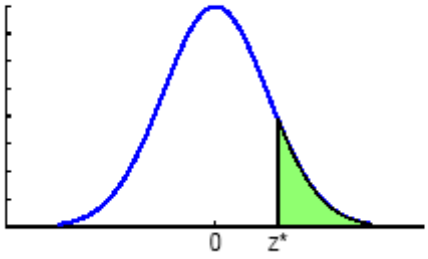
Consider three random variables x, y and z with means m_x, m_y, and m_z, respectively; variances Var(x), Var(y), and Var(z), respectively; and covariance between x and y, for example, given by the formula above. Given any numbers α_x, α_y, α_z, let $v = \alpha_x x + \alpha_y y + \alpha_z z$. Then the variance of v is given by

$$\begin{aligned}\mathrm{Var}(v) = {} & \alpha_x{}^2 \mathrm{Var}(x) + \alpha_y{}^2 \mathrm{Var}(y) + \alpha_z{}^2 \mathrm{Var}(z) \\ & + 2\left(\alpha_x \alpha_y \mathrm{cov}(x, y) + \alpha_y \alpha_z \mathrm{cov}(y, z) + \alpha_x \alpha_z \mathrm{cov}(x, z)\right)\end{aligned}$$

SPECIAL DATA SHEET 2

Standard Normal Distribution Table

(Areas under the standard normal curve beyond z*, i.e., shaded area)



z^*	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Wednesday 11 January 2017 9:00 to 11:00

Paper MM2

Marketing

*Answer **two** questions*

*Both questions carry 50 marks each. The **approximate** number of marks allocated to each part of a question is indicated.*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Approved calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

1 *(a)* "Business has only two basic functions – marketing and innovation; everything else is a cost." Discuss this statement. **[10 marks]**

(b) "In a market with strong network effects, it is important to be a first mover in innovations." Discuss this statement. **[15 marks]**

(c) In the Tipping Point Game in-class exercise (Session 7), everyone would have earned the highest possible profit, had all the participants bought the product. Discuss why it could still happen that, upon repeatedly playing the game, participants' decisions converged towards no one buying (you do not need to describe the rules of the game in your answer). **[25 marks]**

2 *(a)* Discuss three different possible concerns that would advise against conducting a large-scale marketing research project before launching a new product. **[15 marks]**

(b) Briefly describe A/B testing as a marketing research method. **[10 marks]**

(c) With reference to the Château Margaux case study, discuss the claim that "Château Margaux does little marketing research," and suggest relevant recommendations that you think the company should consider. **[25 marks]**

3 *(a)* With reference to the case exercise on the Harry Potter and Transformers Dilemmas, explain why the competitive scenario can be understood as a game of chicken. **[10 marks]**

(b) "Hubris is a fatal flaw in business competition." Discuss this statement (hubris means extreme pride or self-confidence). **[20 marks]**

(c) Discuss why some software manufacturers frequently launch new versions of their products that differ from previous versions in only small, minor improvements. **[20 marks]**

4 *(a)* With reference to the Dove Real Beauty Sketches Campaign case study, discuss why the Real Beauty Sketches video could become a viral hit. **[15 marks]**

(b) Discuss two possible ways by which a brand extension may hurt the parent brand. **[10 marks]**

(c) "Sometimes, the best strategy for a company to promote its brand is not to promote it." Discuss this statement. **[25 marks]**

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Monday 24 April 2017 9:00 to 11:00

Paper MM3

BUSINESS ECONOMICS

*You have **2 hours** to complete the exam.*

***Answer all problems/parts**: Part I (problem) counts for 32 points, Part II (Multiple Choice part) for 36 points, Part III (Discussion) for 32 points. Total is 100 points.*

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

*Illegible (difficult to read) answers will **not** receive credit.*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

PART I (32 points)

KKK satellite company broadcasts TV to subscribers in New York and Los Angeles. The demand functions for each of these two groups are

$$Q_{NY} = 60 - 0.25P_{NY} \qquad Q_{LA} = 100 - 0.50P_{LA}$$

where Q is in thousands of subscriptions per year and P is the subscription price per year. The cost of providing Q units of service is given by

$$C = 1000 + 40Q$$

where $Q = Q_{NY} + Q_{LA}$.

A. What are the profit-maximizing prices and quantities for the New York and Los Angeles markets?

B. As a consequence of a new satellite that the Pentagon recently deployed, people in Los Angeles receive KKK's New York broadcasts, and people in New York receive KKK's Los Angeles broadcasts. As a result, anyone in New York or Los Angeles can receive KKK's broadcasts by subscribing in either city. Thus KKK can charge only a single price. What price should he charge, and what quantities will he sell in New York and Los Angeles?

C. In which of the above situations, (a) or (b), is KKK better off? In terms of consumer surplus, which situation do people in New York prefer and which do people in Los Angeles prefer? Why?

PART II (36 points, 3 points each)

Answer by writing the question number and the letter of one correct answer.

1 As the price of good X increases from $5 to $8, quantity demanded falls from 100 to 80. Based upon this information we can conclude that the demand for X is

A) elastic.
B) inelastic.
C) unit inelastic.
D) insufficient information for judgment.

2 Which of the following statements is true regarding economic and accounting costs?

A) Accounting costs include all implicit and explicit costs.
B) Economic costs include implied costs only.
C) Accountants consider only implicit costs when calculating costs.
D) Accounting costs include only explicit costs.

3 Economies of scope refer to

A) changes in technology.
B) the very long run.
C) multiproduct firms.
D) single product firms that utilize multiple plants.
E) short-run economies of scale.

4 A third-degree price discriminating monopolist can sell its output either in the local market or on an internet auction site (or both). After selling all of its output, the firm discovers that the marginal revenue earned in the local market was $20 while its marginal revenue on the internet auction site was $30. To maximize profits the firm should

A) have sold more output in the local market and less at the internet auction site.
B) do nothing until it acquires more information on costs.
C) have sold less output in the local market and more on the internet auction site.
D) sell less in both markets until marginal revenue is zero.
E) sell more in both markets until marginal cost is zero.

(TURN OVER)

5 Consider the following game: Payoffs are in millions of dollars.

		Lawrence LLP	
		Put Poison Pill In Turbo Tech	Dump Cash Assets of Zamboni Tech
ERS Corporation	Buy Turbo Tech	-$100, -$1	$2, -$0.5
	Buy Zamboni Tech	$1, -$1	-$0.5, -$0.5

In the game above,

A) "Poison Pill" is a dominant strategy for Lawrence LLP.
B) "Dump" is a dominant strategy for Lawrence LLP.
C) "TurboTech" is a dominant strategy for ERS Co.
D) "ZamboniTech" is a dominant strategy for ERS Co.
E) No firm has a dominant strategy.

6 In comparing the Cournot equilibrium with the competitive equilibrium,

A) both profit and output level are higher in Cournot.
B) both profit and output level are higher in the competitive equilibrium.
C) profit is higher, and output level is lower in the competitive equilibrium.
D) profit is higher, and output level is lower in Cournot.

7 When sellers have more information about products than buyers do, we would expect

A) sellers to get higher prices for their goods than they could otherwise.
B) buyers to pay lower prices for goods than they would otherwise.
C) high-quality goods to drive low-quality goods out of the market.
D) low-quality goods to drive high-quality goods out of the market.

8 In order for a taxicab to be operated in New York City, it must have a medallion (that lasts for ever) on its hood. Medallions are expensive, but can be resold, and are therefore an example of

A) a fixed cost.
B) a variable cost.
C) an implicit cost.
D) an opportunity cost.
E) a sunk cost.

9 A production function assumes a given

A) technology.
B) set of input prices.
C) ratio of input prices.
D) amount of capital and labor.
E) amount of output.

10 Which of the following is NOT a reason for average costs to fall according to the learning curve?

A) Workers accomplish tasks more quickly after doing the task a few times.
B) Managers schedule more efficiently over time.
C) Engineers determine more accurately what tolerances can be used.
D) Suppliers may become better able to produce the exact inputs the firm needs.
E) Competing firms leave the industry as the learning firm becomes more efficient.

11 Deadweight loss refers to

A) losses in consumer surplus associated with excess government regulations.
B) situations where market prices fail to capture all of the costs and benefits of a policy.
C) net losses in total surplus.
D) losses due to the policies of labor unions.

12 Which of the following is NOT true regarding monopoly?

A) Monopoly is the sole producer in the market.
B) Monopoly price is determined from the demand curve.
C) Monopolist can charge the highest possible price.
D) Monopoly demand curve is downward sloping.

(TURN OVER)

PART III (32 points)

Matilda Bottlers bottles and distributes wines and spirits in Australia. Big Gator is a conglomerate that manufactures, among other things, a popular lager beer. By virtue of a lifetime contract, Matilda has exclusive rights to bottle and distribute Big Gator Beer in New South Wales, the largest state in Australia. Matilda uses its monopsony power to pay a lower price for Big Gator Beer than do bottlers in other states. Should Big Gator buy out Matilda Bottlers?

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Wednesday 26 April 2017 9:00 to 11:00

Paper MM4

STRATEGY

You must answer either question 1 or question 2. The exam is strictly closed book.

You have two hours to complete the examination.

*Write your number **not** your name on the cover sheet of **each** Section booklet.*

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

At the end of the examination: Please remain seated until your test paper and answer booklet have been collected. Please remain silent until you have left the test room.

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

QUESTION 1

SAMSUNG'S ERODING PROFIT

A New York Times article by Brian X. Chen published on 13 July 2014 announced that the profit of world-leading cellphone manufacturer, Samsung Electronics, had fallen by 25% year-on-year – in part due to intensifying competition in China from cost-cutting local rivals such as Xiaomi and Huawei. By selling products almost at cost, the latter rapidly gained market share and threatened the margins of longer-established competitors worldwide. At the same time, upmarket rival Apple continued to improve sales. Samsung envisioned two strategic moves to counterattack: cutting prices, or boosting product innovation. A decision to cut prices to boost its sales would pressure other incumbents such as HTC and Motorola to also lower prices, and could result in lower quality products and slimmer margins across the industry.

Samsung competes by offering a wide range of products to cater for the needs of every customer worldwide at a wide range of prices. It benefits from a premium brand reputation and utilizes cutting edge technology. Whereas Apple runs its own proprietary iOS system, Samsung smartphones, just like its Chinese rivals', run Google's Android system. All Android smartphones work in similar ways, and hardware does not set them apart. Samsung customers can switch to other Android devices from rival manufacturers without losing out on their software and Internet services experience. Handset manufacturer Xiaomi has therefore turned to Internet services as its prime source of revenue. Lin Bin, one of Xiaomi's founders, is quoted in the article as follows: "Cellphones are really just like PCs were 20 years ago […]. They generated big profit margins in the beginning. But those margins are in the single digits now. The same thing is beginning to happen to smartphones. So rather than focus on devices where margins will decline, we're focusing on services." In contrast, Samsung's and Apple's core business rely on selling hardware.

(Source: adapted from http://www.nytimes.com/2014/07/14/technology/samsung-considers-its-counterattack-as-rivals-erode-cellphone-profit.html?smid=fb-share)

Question 1.a.
Based on the data provided above and explicitly using the frameworks and concepts introduced and examined in class and in the strategy readings as well as comparisons with specific examples, identify and explain Samsung's business strategy. (30%)

Question 1.b.
Explicitly using the frameworks and concepts introduced
and examined in class and in the strategy readings as well as comparisons with specific examples, explain what the situation described in the mini-case is. (20%)

Question 1.c.
Discuss the pros and cons of being a first-mover or a late-mover in a technology-based industry. (30%)

Question 1.d.
Based on your analysis, what strategic moves would you advise Samsung to pursue? (20%)

(TURN OVER)

QUESTION 2

Explicitly use (a) relevant strategy frameworks and concepts introduced and examined in class and in the strategy readings and (b) specific examples discussed in class, in the strategy readings or taken from your own work experience to answer the following questions:

Question 2.a.
What are the risks, in terms of strategy, of producing low cost, highly differentiated products or services? (30%)

Question 2.b.
Under which circumstances and under the implementation of which strategies is the production of low cost, highly differentiated products or services economically viable for an organization? (20%)

Question 2.c.
Define the logic and toolkit of the resource-based view of strategy, and apply the latter to an example of your choice (30%)

Question 2.d.
Discuss the following statement: “Organizational learning is the only source of sustainable competitive advantage”. What organizational characteristics are required by organizations as they seek to gain and maintain a competitive advantage based on organizational learning? (20%)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Monday 9 January 2017 14:00 to 16:00

Paper MM5

Organizational Analysis

*Answer **two** from **four** questions*

All questions carry the same number of marks

The approximate percentage of marks allocated to each part of the examination question is indicated for each section

STATIONERY REQUIREMENTS
20 Page Answer Booklet

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
None

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

QUESTION 1

a. Define the components of the Big Five measures of personality. (25% of marks)

b. Examine the usefulness of personality assessments when recruiting employees. (25% of marks)

c. Using examples from practice, explain the meaning and relevance of person-organization fit to organizational analysis. (50% of marks)

QUESTION 2

a. Explain the Job Characteristics Model. What can managers do to increase the model's core job dimensions? Corroborate your answer with examples. (30% of marks)

b. What are Self-determination Theory's predictions about how to foster self-determined behaviour? Corroborate your answer with examples. (30% of marks)

c. "Goal setting is a highly effective motivation technique." Discuss. (40% of marks)

QUESTION 3

You have been elected President of your country after a contentious, divisive, and hard-fought election. One of your first responsibilities is to form a leadership team. What are your key challenges in selecting a team and giving it the best chances of succeeding? (100% of marks)

QUESTION 4

a. Compare and contrast two leadership theories. (50% of marks)

b. Examine the methods by which organizational culture can be managed. Ensure that you use examples from management practice to illustrate your answer. (50% of marks)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Tuesday 25 April 2017 9:00 to 11:00

Paper MM6

FINANCE

This is a two hour written paper with an additional 10 minutes of reading time

You must answer all questions

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

At the end of the test: Please remain seated until your test answer booklet has been collected; unwanted scrap paper will be collected and disposed of. Please remain silent until you have left the test room.

N.B. AT THE END OF THIS PAPER ARE SPECIAL DATA SHEETS AND PRESENT VALUE TABLES

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

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[1]This is the Subject Code

QUESTION I [30 marks – 2.5 marks per question]

1. A friend who owns a perpetuity that promises to pay $1,000 at the end of each year, forever, comes to you and offers to sell you all of the payments to be received after the 25th year for a price of $1,000. At an interest rate of 10%, should you pay the $1,000 today to receive payment numbers 26 and onwards? What does this suggest to you about the value of perpetual payments?

2. Turnips and Parsley common stock sells for $39.86 a share at a market rate of return of 9.5%. The company just paid its annual dividend of $1.20. What is the rate of growth of its dividend?

3. Jamestown Ltd. currently produces boat sails and is considering expanding its operations to include awnings for homes and travel trailers. The company owns land next to its current manufacturing facility that could be used for the expansion. The company bought this land ten years ago at a cost of $250,000. Today, the land is valued at $425,000. The grading and excavation work necessary to build on the land will cost $15,000. The company currently owns some unused equipment valued at $60,000. This equipment could be used for producing awnings if $5,000 is spent for equipment modifications. Other equipment costing $780,000 will also be required. What is the amount of the initial cash flow for this expansion project?

4. You just purchased some equipment that is classified as 5-year property for MACRS. The equipment costs $67,600. What will the book value of this equipment be at the end of three years should you decide to resell the equipment at that point in time?

MACRS 5-year property

Year	Rate
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

5. A project will produce an operating cash flow of $7,300 a year for three years. The initial cash investment in the project will be $11,600. The net after-tax salvage value is estimated at $3,500 and will be received during the last year of the project's life. What is the net present value of the project if the required rate of return is 11%?

6. The expected return on HiLo stock is 13.69% while the expected return on the market is 11.5%. The beta of HiLo is 1.3. What is the risk-free rate of return?

7. Which one of the following stocks is correctly priced if the risk-free rate of return is 2.5% and the market risk premium is 8%?

Stock	Beta	Expected Return
A	0.68	8.2%
B	1.42	13.9%
C	1.23	11.8%
D	1.31	12.6%
E	0.94	9.7%

8. Jake's Sound Systems has 210,000 shares of common stock outstanding at a market price of $36 per share. Last month, Jake's paid an annual dividend of $1.593 per share. The dividend growth rate is 4%. Jake's also has 6,000 bonds outstanding with a face value of $1,000 per bond. The bonds carry a 7 % coupon, pay interest annually, and mature in 4.89 years. The bonds are selling at 99% of face value. The company's tax rate is 34%. What is Jake's weighted average cost of capital?

9. You own 25% of Unique Vacations, Inc. You have decided to retire and want to sell your shares in this closely held, all equity firm. The other shareholders have agreed to have the firm borrow $1.5 million to purchase your 1,000 shares of stock. What is the total value of this firm today if you ignore taxes?

10. The Montana Hills Co. has expected earnings before interest and taxes of $8,100, an unlevered cost of capital of 11%, and debt with both a book and face value of $12,000. The debt has an annual 8% coupon. The tax rate is 34%. What is the value of the firm?

11. What is the cost of equity of a firm if the corporate tax rate is 40%? The firm has a debt-to-equity ratio of 1.5. If it had no debt, its cost of equity would be 16%. Its current cost of debt is 12%.

(TURN OVER)

12. The Azzon Oil Company is considering a project that will cost $50 million and have a year-end after-tax cost savings of $7 million in perpetuity. Azzon's before tax cost of debt is 10% and its cost of equity is 16%. The project has risk similar to that of the operation of the firm, and the target debt-equity ratio is 1.5. What is the NPV for the project if the tax rate is 34%?

QUESTION 2 [30 marks]

With the growing popularity of casual surf print clothing, two recent MBA graduates decided to broaden this casual surf concept to encompass a "surf lifestyle for the home." With limited capital, they decided to focus on surf print table and floor lamps to accent people's houses. They projected unit sales of these lamps to be 5,000 in the first year, with growth of 15 percent each year, from the second year to the fifth year. Production of these lamps will require £28,000 in net working capital to start. Total fixed costs are £75,000 per year, variable production costs are £20 per unit, and the units are priced at £45 each. The equipment needed to begin the production will cost £60,000. The equipment will be depreciated using the straight-line method over a five-year life and is expected to have a salvage value of £10,000 by the end of year 5. The effective tax rate is 34 percent, and the required rate of return is 25 percent.

What is the NPV of the project?

QUESTION 3 [20 marks]

The U.S. government bond (T-Bill) rate is 4 percent, and the expected return on the market portfolio is 12 percent. On the basis of the Capital Asset Pricing Model (CAPM):

a. Draw a graph showing how the expected return varies with the beta. [**4 marks**]
b. What is the risk premium on the market? [**4 marks**]
c. What is the required return on an investment with a beta of 1.5? [**4 marks**]
d. If an investment with a beta of 0.8 offers an expected return of 9.8 percent, does it have a positive NPV? [**4 marks**]
e. If the market expects a return of 11.2 percent from stock X, what is its beta? [**4 marks**]

QUESTION 4 [20 marks]

CamTech plc. is a company based in the Fen Silicon area, a well-known technology cluster in the city of Cambridge, United Kingdom. The company has a debt-equity ratio of 0.45. The required return on the company's unlevered equity is 17 percent, and the pre-tax cost of the firm's debt is 9 percent. Sales revenues for the company are expected to remain stable indefinitely at last year's level of £23,500,000. Variable costs amount to 60 percent of sales. The tax rate is 40 percent, and the company distributes all its earnings as dividends at the end of each year.

a. If the company were financed entirely by equity, how much would it be worth? **[5 marks]**
b. What is the required return on the firm's levered equity? **[5 marks]**
c. Use the weighted average cost of capital (WACC) method to calculate the value of the company. What is the value of the company's equity? What is the value of the company's debt? **[5 marks]**
d. Use the flow to equity (FTE) method to calculate the value of the company's equity. **[5 marks]**

END OF PAPER

(TURN OVER)

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SPECIAL DATA SHEET

1. *Present value of*

1.1 An annuity

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

1.2 A growing annuity

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

1.3 A perpetuity

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

1.4 A growing perpetuity

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

2. Bond value equation

$$\text{Bond Value} = C\left[\frac{1}{r} - \frac{1}{r(1+r)^T}\right] + \frac{\text{FV}}{(1+r)^{\text{T}}}$$

3. Cash Flow from Operations

OCF = EBIT + Depreciation – Current Taxes

OCF = (Sales – Costs)*(1 – T) + Depreciation*T

4. Net Capital Spending

Net Capital Spending = Purchase of fixed assets – Sales of fixed assets = Ending fixed assets – beginning fixed assets + depreciation

5. Changes in Working Capital (NWC Net Working Capital)

Working Capital (WC) = Total Current Assets – Total Current Liabilities
Change in WC = Ending WC – beginning WC

6. Cash Flow from the Firm (Free Cash Flow; Cash Flow from the Asset)

FCF = Operating Cash Flow - Net Capital Spending - Change in WC

7. <u>The Capital Asset Pricing Model (CAPM)</u>

$$\overline{R}_i = R_F + \beta_i \times (\overline{R}_M - R_F)$$

8. <u>The weighted average cost of capital</u>

$R_{\text{WACC}} = (\frac{D}{D+E})*(1 - t_C)*R_D + (\frac{E}{D+E})*R_E$

9. M&M theorems without corporate taxes

$V_L = V_U$

$$R_E = R_0 + \frac{D}{E_L} \times (R_0 - R_D)$$

$$\beta_E = \beta_0 + (\beta_0 - \beta_D) \times \frac{D}{E_L}$$

10. M&M theorems with corporate taxes

$V_L = V_U + T_C \times D$

$$R_E = R_0 + \frac{D}{E_L} \times (1 - T_C) \times (R_0 - R_D)$$

$$\beta_E = \beta_0 + \frac{D}{E_L} \times (1 - T_C) \times (\beta_0 - \beta_D)$$

11. Beta of the levered firm

When firm is levered, the beta of the levered equity will be:

- If the Beta of debt is zero:

$$\beta_{\text{Equity}} = \left(1 + \frac{\text{Debt}}{\text{Equity}} \times (1 - t_C)\right) \beta_{\text{Unlevered firm}}$$

- If the beta of debt is non-zero:

$$\beta_{\text{Equity}} = \beta_{\text{Unlevered firm}} + (1 - t_C)(\beta_{\text{Unlevered firm}} - \beta_{\text{Debt}}) \times \frac{B}{S_L}$$

12. APV, FTE, and WACC method for investment project

$$APV = \sum_{t=1}^{\infty} \frac{UCF_t}{(1 + R_0)^t} + \begin{matrix}\text{Additional} \\ \text{effects of} \\ \text{debt}\end{matrix} - \begin{matrix}\text{Initial} \\ \text{investment}\end{matrix}$$

$$FTE = \sum_{t=1}^{\infty} \frac{LCF_t}{(1 + R_E)^t} - \left(\begin{matrix}\text{Initial} \\ \text{investment}\end{matrix} - \begin{matrix}\text{Amount} \\ \text{borrowed}\end{matrix}\right)$$

$$NPV_{WACC} = \sum_{t=1}^{\infty} \frac{UCF_t}{(1 + R_{WACC})^t} - \begin{matrix}\text{Initial} \\ \text{investment}\end{matrix}$$

Present Value Tables

APPENDIX TABLE 1

Discount factors: Present value of $1 to be received after t years $= 1/(1 + r)^t$.

Number of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	.980	.961	.943	.925	.907	.890	.873	.857	.842	.826	.812	.797	.783	.769	.756
3	.971	.942	.915	.889	.864	.840	.816	.794	.772	.751	.731	.712	.693	.675	.658
4	.961	.924	.888	.855	.823	.792	.763	.735	.708	.683	.659	.636	.613	.592	.572
5	.951	.906	.863	.822	.784	.747	.713	.681	.650	.621	.593	.567	.543	.519	.497
6	.942	.888	.837	.790	.746	.705	.666	.630	.596	.564	.535	.507	.480	.456	.432
7	.933	.871	.813	.760	.711	.665	.623	.583	.547	.513	.482	.452	.425	.400	.376
8	.923	.853	.789	.731	.677	.627	.582	.540	.502	.467	.434	.404	.376	.351	.327
9	.914	.837	.766	.703	.645	.592	.544	.500	.460	.424	.391	.361	.333	.308	.284
10	.905	.820	.744	.676	.614	.558	.508	.463	.422	.386	.352	.322	.295	.270	.247
11	.896	.804	.722	.650	.585	.527	.475	.429	.388	.350	.317	.287	.261	.237	.215
12	.887	.788	.701	.625	.557	.497	.444	.397	.356	.319	.286	.257	.231	.208	.187
13	.879	.773	.681	.601	.530	.469	.415	.368	.326	.290	.258	.229	.204	.182	.163
14	.870	.758	.661	.577	.505	.442	.388	.340	.299	.263	.232	.205	.181	.160	.141
15	.861	.743	.642	.555	.481	.417	.362	.315	.275	.239	.209	.183	.160	.140	.123
16	.853	.728	.623	.534	.458	.394	.339	.292	.252	.218	.188	.163	.141	.123	.107
17	.844	.714	.605	.513	.436	.371	.317	.270	.231	.198	.170	.146	.125	.108	.093
18	.836	.700	.587	.494	.416	.350	.296	.250	.212	.180	.153	.130	.111	.095	.081
19	.828	.686	.570	.475	.396	.331	.277	.232	.194	.164	.138	.116	.098	.083	.070
20	.820	.673	.554	.456	.377	.312	.258	.215	.178	.149	.124	.104	.087	.073	.061

Number of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.862	.855	.847	.840	.833	.826	.820	.813	.806	.800	.794	.787	.781	.775	.769
2	.743	.731	.718	.706	.694	.683	.672	.661	.650	.640	.630	.620	.610	.601	.592
3	.641	.624	.609	.593	.579	.564	.551	.537	.524	.512	.500	.488	.477	.466	.455
4	.552	.534	.516	.499	.482	.467	.451	.437	.423	.410	.397	.384	.373	.361	.350
5	.476	.456	.437	.419	.402	.386	.370	.355	.341	.328	.315	.303	.291	.280	.269
6	.410	.390	.370	.352	.335	.319	.303	.289	.275	.262	.250	.238	.227	.217	.207
7	.354	.333	.314	.296	.279	.263	.249	.235	.222	.210	.198	.188	.178	.168	.159
8	.305	.285	.266	.249	.233	.218	.204	.191	.179	.168	.157	.148	.139	.130	.123
9	.263	.243	.225	.209	.194	.180	.167	.155	.144	.134	.125	.116	.108	.101	.094
10	.227	.208	.191	.176	.162	.149	.137	.126	.116	.107	.099	.092	.085	.078	.073
11	.195	.178	.162	.148	.135	.123	.112	.103	.094	.086	.079	.072	.066	.061	.056
12	.168	.152	.137	.124	.112	.102	.092	.083	.076	.069	.062	.057	.052	.047	.043
13	.145	.130	.116	.104	.093	.084	.075	.068	.061	.055	.050	.045	.040	.037	.033
14	.125	.111	.099	.088	.078	.069	.062	.055	.049	.044	.039	.035	.032	.028	.025
15	.108	.095	.084	.074	.065	.057	.051	.045	.040	.035	.031	.028	.025	.022	.020
16	.093	.081	.071	.062	.054	.047	.042	.036	.032	.028	.025	.022	.019	.017	.015
17	.080	.069	.060	.052	.045	.039	.034	.030	.026	.023	.020	.017	.015	.013	.012
18	.069	.059	.051	.044	.038	.032	.028	.024	.021	.018	.016	.014	.012	.010	.009
19	.060	.051	.043	.037	.031	.027	.023	.020	.017	.014	.012	.011	.009	.008	.007
20	.051	.043	.037	.031	.026	.022	.019	.016	.014	.012	.010	.008	.007	.006	.005

Note: For example, if the interest rate is 10% per year, the present value of $1 received at year 5 is $.621.

APPENDIX TABLE 2

Future value of \$1 after t years $= (1 + r)^t$.

Number of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100	1.110	1.120	1.130	1.140	1.150
2	1.020	1.040	1.061	1.082	1.102	1.124	1.145	1.166	1.188	1.210	1.232	1.254	1.277	1.300	1.323
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331	1.368	1.405	1.443	1.482	1.521
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464	1.518	1.574	1.630	1.689	1.749
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611	1.685	1.762	1.842	1.925	2.011
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772	1.870	1.974	2.082	2.195	2.313
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949	2.076	2.211	2.353	2.502	2.660
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144	2.305	2.476	2.658	2.853	3.059
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358	2.558	2.773	3.004	3.252	3.518
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594	2.839	3.106	3.395	3.707	4.046
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853	3.152	3.479	3.836	4.226	4.652
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138	3.498	3.896	4.335	4.818	5.350
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452	3.883	4.363	4.898	5.492	6.153
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797	4.310	4.887	5.535	6.261	7.076
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177	4.785	5.474	6.254	7.138	8.137
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595	5.311	6.130	7.067	8.137	9.358
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054	5.895	6.866	7.986	9.276	10.76
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560	6.544	7.690	9.024	10.58	12.38
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116	7.263	8.613	10.20	12.06	14.23
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727	8.062	9.646	11.52	13.74	16.37

Number of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	1.160	1.170	1.180	1.190	1.200	1.210	1.220	1.230	1.240	1.250	1.260	1.270	1.280	1.290	1.300
2	1.346	1.369	1.392	1.416	1.440	1.464	1.488	1.513	1.538	1.563	1.588	1.613	1.638	1.664	1.690
3	1.561	1.602	1.643	1.685	1.728	1.772	1.816	1.861	1.907	1.953	2.000	2.048	2.097	2.147	2.197
4	1.811	1.874	1.939	2.005	2.074	2.144	2.215	2.289	2.364	2.441	2.520	2.601	2.684	2.769	2.856
5	2.100	2.192	2.288	2.386	2.488	2.594	2.703	2.815	2.932	3.052	3.176	3.304	3.436	3.572	3.713
6	2.436	2.565	2.700	2.840	2.986	3.138	3.297	3.463	3.635	3.815	4.002	4.196	4.398	4.608	4.827
7	2.826	3.001	3.185	3.379	3.583	3.797	4.023	4.259	4.508	4.768	5.042	5.329	5.629	5.945	6.275
8	3.278	3.511	3.759	4.021	4.300	4.595	4.908	5.239	5.590	5.960	6.353	6.768	7.206	7.669	8.157
9	3.803	4.108	4.435	4.785	5.160	5.560	5.987	6.444	6.931	7.451	8.005	8.595	9.223	9.893	10.60
10	4.411	4.807	5.234	5.695	6.192	6.728	7.305	7.926	8.594	9.313	10.09	10.92	11.81	12.76	13.79
11	5.117	5.624	6.176	6.777	7.430	8.140	8.912	9.749	10.66	11.64	12.71	13.86	15.11	16.46	17.92
12	5.936	6.580	7.288	8.064	8.916	9.850	10.87	11.99	13.21	14.55	16.01	17.61	19.34	21.24	23.30
13	6.886	7.699	8.599	9.596	10.70	11.92	13.26	14.75	16.39	18.19	20.18	22.36	24.76	27.39	30.29
14	7.988	9.007	10.15	11.42	12.84	14.42	16.18	18.14	20.32	22.74	25.42	28.40	31.69	35.34	39.37
15	9.266	10.54	11.97	13.59	15.41	17.45	19.74	22.31	25.20	28.42	32.03	36.06	40.56	45.59	51.19
16	10.75	12.33	14.13	16.17	18.49	21.11	24.09	27.45	31.24	35.53	40.36	45.80	51.92	58.81	66.54
17	12.47	14.43	16.67	19.24	22.19	25.55	29.38	33.76	38.74	44.41	50.85	58.17	66.46	75.86	86.50
18	14.46	16.88	19.67	22.90	26.62	30.91	35.85	41.52	48.04	55.51	64.07	73.87	85.07	97.86	112.5
19	16.78	19.75	23.21	27.25	31.95	37.40	43.74	51.07	59.57	69.39	80.73	93.81	108.9	126.2	146.2
20	19.46	23.11	27.39	32.43	38.34	45.26	53.36	62.82	73.86	86.74	101.7	119.1	139.4	162.9	190.0

Note: For example, if the interest rate is 10% per year, the investment of \$1 today will be worth \$1.611 at year 5.

APPENDIX TABLE 3

Annuity table: Present value of $1 per year for each of t years $= 1/r - 1/[r(1 + r)^t]$.

Number of Years	Interest Rate per Year														
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	.990	.980	.971	.962	.952	.943	.935	.926	.917	.909	.901	.893	.885	.877	.870
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	1.713	1.690	1.668	1.647	1.626
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	2.444	2.402	2.361	2.322	2.283
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	3.102	3.037	2.974	2.914	2.855
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	3.696	3.605	3.517	3.433	3.352
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	4.231	4.111	3.998	3.889	3.784
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	4.712	4.564	4.423	4.288	4.160
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	5.146	4.968	4.799	4.639	4.487
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	5.537	5.328	5.132	4.946	4.772
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	5.889	5.650	5.426	5.216	5.019
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	6.207	5.938	5.687	5.453	5.234
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	6.492	6.194	5.918	5.660	5.421
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	6.750	6.424	6.122	5.842	5.583
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	6.982	6.628	6.302	6.002	5.724
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	7.191	6.811	6.462	6.142	5.847
16	14.72	13.58	12.56	11.65	10.84	10.11	9.447	8.851	8.313	7.824	7.379	6.974	6.604	6.265	5.954
17	15.56	14.29	13.17	12.17	11.27	10.48	9.763	9.122	8.544	8.022	7.549	7.120	6.729	6.373	6.047
18	16.40	14.99	13.75	12.66	11.69	10.83	10.06	9.372	8.756	8.201	7.702	7.250	6.840	6.467	6.128
19	17.23	15.68	14.32	13.13	12.09	11.16	10.34	9.604	8.950	8.365	7.839	7.366	6.938	6.550	6.198
20	18.05	16.35	14.88	13.59	12.46	11.47	10.59	9.818	9.129	8.514	7.963	7.469	7.025	6.623	6.259

Number of Years	Interest Rate per Year														
	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.862	.855	.847	.840	.833	.826	.820	.813	.806	.800	.794	.787	.781	.775	.769
2	1.605	1.585	1.566	1.547	1.528	1.509	1.492	1.474	1.457	1.440	1.424	1.407	1.392	1.376	1.361
3	2.246	2.210	2.174	2.140	2.106	2.074	2.042	2.011	1.981	1.952	1.923	1.896	1.868	1.842	1.816
4	2.798	2.743	2.690	2.639	2.589	2.540	2.494	2.448	2.404	2.362	2.320	2.280	2.241	2.203	2.166
5	3.274	3.199	3.127	3.058	2.991	2.926	2.864	2.803	2.745	2.689	2.635	2.583	2.532	2.483	2.436
6	3.685	3.589	3.498	3.410	3.326	3.245	3.167	3.092	3.020	2.951	2.885	2.821	2.759	2.700	2.643
7	4.039	3.922	3.812	3.706	3.605	3.508	3.416	3.327	3.242	3.161	3.083	3.009	2.937	2.868	2.802
8	4.344	4.207	4.078	3.954	3.837	3.726	3.619	3.518	3.421	3.329	3.241	3.156	3.076	2.999	2.925
9	4.607	4.451	4.303	4.163	4.031	3.905	3.786	3.673	3.566	3.463	3.366	3.273	3.184	3.100	3.019
10	4.833	4.659	4.494	4.339	4.192	4.054	3.923	3.799	3.682	3.571	3.465	3.364	3.269	3.178	3.092
11	5.029	4.836	4.656	4.486	4.327	4.177	4.035	3.902	3.776	3.656	3.543	3.437	3.335	3.239	3.147
12	5.197	4.988	4.793	4.611	4.439	4.278	4.127	3.985	3.851	3.725	3.606	3.493	3.387	3.286	3.190
13	5.342	5.118	4.910	4.715	4.533	4.362	4.203	4.053	3.912	3.780	3.656	3.538	3.427	3.322	3.223
14	5.468	5.229	5.008	4.802	4.611	4.432	4.265	4.108	3.962	3.824	3.695	3.573	3.459	3.351	3.249
15	5.575	5.324	5.092	4.876	4.675	4.489	4.315	4.153	4.001	3.859	3.726	3.601	3.483	3.373	3.268
16	5.668	5.405	5.162	4.938	4.730	4.536	4.357	4.189	4.033	3.887	3.751	3.623	3.503	3.390	3.283
17	5.749	5.475	5.222	4.990	4.775	4.576	4.391	4.219	4.059	3.910	3.771	3.640	3.518	3.403	3.295
18	5.818	5.534	5.273	5.033	4.812	4.608	4.419	4.243	4.080	3.928	3.786	3.654	3.529	3.413	3.304
19	5.877	5.584	5.316	5.070	4.843	4.635	4.442	4.263	4.097	3.942	3.799	3.664	3.539	3.421	3.311
20	5.929	5.628	5.353	5.101	4.870	4.657	4.460	4.279	4.110	3.954	3.808	3.673	3.546	3.427	3.316

Note: For example, if the interest rate is 10% per year, the investment of $1 received in each of the next 5 years is $3.791.

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Tuesday 10 January 2017 9:00 to 11:00

Paper MM7

Accounting

*Answer **all** questions in **both** sections*

The approximate percentage of marks allocated to each part of the examination question is indicated for each section

STATIONERY REQUIREMENTS
20 Page Answer Booklet

Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Approved calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

Section A

Question (1)

The financial statements for a hypothetical company XYZ Ltd. are given below for two years ended 30th June 2014 and 2015. The company operates a department store in the centre of a small town.

XYZ Ltd Income Statement for the years ended 30 June

	2014	**2015**
	£000	£000
Sales Revenue	2,600	3,500
Cost of Sales	(1,560)	(2,350)
Gross profit	1,040	1,150
Wages and salaries	(320)	(350)
Overheads	(260)	(200)
Depreciation	(150)	(250)
Operating Profit	310	350
Interest Payable	(50)	(50)
Profit before taxation	260	300
Taxation	(105)	(125)
Profit for the year	**155**	**175**

Balance Sheet as at 30 June

	2014	**2015**
	£000	£000
ASSETS		
Non-current assets		
Property, plant and equipment	1,265	1,525
Current assets		
Inventories	250	400
Trade receivables	105	145
Cash at bank	380	115
	735	660
Total Assets	**2,000**	**2,185**

	2014	2015
	£000	£000
EQUITY AND LIABILITIES		
EQUITY		
Share capital: £1 shares fully paid	490	490
Share premium	260	260
Retained earnings	350	450
	1,100	1,200
Non-current liabilities		
Borrowings – 10% loan notes	500	500
Current liabilities		
Trade payables	300	375
Other payables	100	110
	400	485
Total equity and liabilities	**2,000**	**2,185**

Dividends were paid on ordinary shares of £65,000 and £75,000 in respect of 2014 and 2015, respectively.

Required

a. Choose and calculate six ratios only that would be helpful in assessing the performance of XYZ Ltd. Use end-of-year values and calculate ratios for both 2014 and 2015.

(12 marks)

b. Using the ratios calculated in (a) and any others you consider helpful, comment on the business's performance from the viewpoint of a prospective purchaser of a majority of shares.

(13 marks)

(The total mark for this question is 25 marks)

(TURNOVER)

Question (2)

A company has provided the following information:

Monthly capacity for a department within the company = 50 000 units
Expected monthly production and sales for next quarter at = 35 000 units

Normal selling price of £40 per unit

The following are the estimated costs and revenues (for 35 000 units):

	£	£
Direct labour	420 000	12
Variable costs	350 000	10
Manufacturing non-variable overheads	280 000	8
Marketing and distribution costs	105 000	3
Total costs	1 155 000	33
Sales	1 400 000	40
Profit	245 000	7

• Assume a spare capacity in the foreseeable future (Capacity = 50 000 units and demand = 35 000 units) and that an opportunity from a client of the company for an order to buy 15 000 units per month at £25 selling price emerges involving £1 per unit special selling costs.

• No other opportunities exist so if the contract is not accepted direct labour will be reduced by 30%. In addition manufacturing non-variable costs will be reduced by £70 000 per month and marketing by £20 000. Unutilised facilities can be rented out at £25 000 per month.

Required:

a. Evaluate the order and analyse the different relevant costs or benefits to the company from accepting or not accepting the order. (15 marks)

b. Explain what relevant costs are and what are the reasons for identifying them for management decisions in the above example? Why should the company in the above example need to consider the advantages and disadvantages of reducing the price for the new order? (10 marks)

(The total mark for this question is 25 marks)

Section B

Question (3)

The Cost-Volume-Profit analysis examines the relationship between changes in activity (i.e. Output) and changes in total sales revenue, costs, and net profit.

a. Explain this concept in accounting and its importance for making business decisions.

(12 Marks)

b. Explain if this concept can be linked to our understanding of the objectives of companies to be economically and financially viable, and also for businesses to being efficient and productive.

(13 Marks)

(The total mark for this question is 25 marks)

Question (4)

The need for decisions in business arises because managers are faced with possible changing business conditions both internally on an operational level, and externally on an industry, sector, or economic levels. Some of the changes relate to costs both direct and indirect.

a. Explain the different kind of costs that businesses face, and how they can impact decision making.

(12 marks)

b. Explain how financial statements can reflect the changes of the external environment and also the changes in the internal conditions of a business.

(13 Marks)

(The total mark for this question is 25 marks)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Friday 2 June 2017 9:00 to 11:00

Paper MM8

OPERATIONS MANAGEMENT

This is a two hour written paper with an additional 15 minutes of reading time

*Candidates should answer **all** 4 questions*

*The **approximate** number of marks allocated to each part of a question is indicated in brackets*

*Write your number **not** your name on the cover sheet*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

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[1]This is the Subject Code

1. Kaz's Macaron Company [30 marks]

Kaz's Macaron Company make macarons – a dainty, cream-filled sandwich cookie – to customer order out of a pop-up food van, located in the Cambridge market square. The company operates a same-day order and collection policy: customers place their order and pay via a website, and are then allocated a time to collect their macarons from the van. Macarons are offered in five different flavours, and sold in batches of 12 macarons. Due to the level of demand, each customer can only buy one batch per day. Council regulations governing food production at market square allow production to start at 9.30am each day and the last order must be fully completed by 2pm.

The company has two workers, Kaz and Jess. A time and motion study reveals the following information. First, Kaz reviews the order on her laptop (task time 1 minute). She then beats eggwhites (task time 4 minutes), folds the eggwhite and other ingredients into a bowl (task time 2 minutes), and pipes the mixture on to a tray (task time 1 minute). The macarons then 'rest' for 30 minutes before baking.

Once the macarons have 'rested', Jess takes over. She places the macarons into the oven and sets the timer (task time 30 seconds), whereupon the macarons bake for 15 minutes. Jess then removes the macarons from the oven and places them on a rack (task time 30 seconds) to cool for a further 20 minutes. Jess adds a pre-prepared filing of ganache and places the macarons into a box ready for collection (task time 4 minutes). The customer pick-up takes 1 minute of Jess's time.

The food van currently has one oven, which can hold one batch of macarons at a time. The van has ample space to hold the number of racks of resting and cooling macarons that demand currently requires.

(a) Draw a process flow map of this process. [4 marks]

(b) What is the bottleneck for this process? [2 marks]

(c) Assuming there are no macaron orders already in the system, how long will it take to produce one batch of macarons for immediate collection? [2 marks]

(d) What is the maximum number of batches of macarons that can be produced in one day? You can assume no worker breaks. [3 marks]

(e) What is the average labour utilisation rate? Assume demand exceeds capacity, and that there is always a backlog of orders to process. [3 marks]

(f) How could Kaz's Macaron Company improve the process? [8 marks]

(g) Separately, the company receives many queries from passers-by interested in purchasing one or two macarons at a time directly from the food van. Kaz is considering how to meet this type of demand by holding macarons in stock, while also continuing with make-to-order sales via the website. What advice would you give Kaz regarding this potential change? You may make reasonable assumptions as part of your answer. [8 marks]

2. MHI Inc. [20 marks]

MHI Inc. (MHI) distributes products for the trade-only automotive aftermarket, primarily independent car garages and mechanics. MHI carries an unrivalled range of over 15,000 product lines fulfilled from a distribution centre in Peterborough, and have a reputation as a distributor of both own-brand and trusted third-party brands that are affordably priced and offer 'fit and forget' quality. Customers can place orders over the phone, online or via an app. Consistent with competitors, orders are taken up until 7pm (weekdays) for next day delivery. MHI prides itself on superior service, offering a 24/7 call centre, convenient online account management and payments for customers, and a simple, no-fuss returns policy.

a) Describe MHI's competitive priorities. [5 marks]

Data collected from the distribution centre indicates that the facility holds around 500,000 items in stock, and ships 50,000 orders to customers every week. On average, 60% of orders contain one item, 30% contain two items and the remaining 10% of orders contain three items.

b) How many days, on average, is inventory held at the MHI distribution centre? [3 marks]

The CEO has recently heard about a new technology called 3D printing ('additive manufacturing'), and wondered how it might be applied in the distribution centre. Initial investigations, for example, indicate that approximately 15% of items held in stock could be printed in response to customer demand.

c) How would your answer in part b) change in light of the above information? [2 marks]

d) What other benefits might the company expect to receive from reducing inventory holdings in its distribution centre? [2 marks]

e) Where on the product-process matrix would you position 3D printing? Justify your answer. [8 marks]

[TURNOVER]

3. Lean in Higher Education [30 marks]

The Riewoldt School of Health ("RSH"), a department of a large University, employs 50 faculty, 10 teaching fellows and 30 administrative staff who together deliver six degree programmes to about 600 students at undergraduate, masters and PhD level. While the Riewoldt School is consistently ranked highly in most rankings tables, Lauren McHugh, the Director of Teaching, is convinced they can deliver a better experience for their students and staff.

Lauren reflected on some of the difficulties experienced by students and administrative staff each day. Students regularly move from one part of the campus to another for classes, meaning classes often start late or are interrupted by late attenders. Sometimes the requirements of course assessment are unclear, so that students have to redo their work prior to submission. The administrative offices are also quite cluttered: student assignments from previous years, out-of-date marketing materials, and excess welcome backpacks are held 'just-in-case' they are needed. For the administrative staff coping with variability in their workload is also challenging: some times of the year are very quiet, but others times have them working considerable amounts of overtime supporting course delivery (for example, enrolment of new students or completing marksheets for exam boards). Processing student applications also creates a headache, with paper applications being sent around several people and departments before a decision is made.

For Lauren, her working environment is hardly any better. She struggles to get visibility on the status of teaching-related activities within the School. Her day-to-day communication with staff in charge of individual courses and support functions (like marketing and student admissions) is poor, and mostly limited to fire-fighting problems. She also wondered how to address the results of a recent staff survey which highlighted significant variation in how the same processes were carried out across different taught programmes (e.g. the timing and feedback of student assessment).

Lauren worries that the teaching activities in the School operate on the basis of goodwill and heroics by the staff, and this is clearly not sustainable. A chance conversation with a process improvement consultant has Lauren thinking that Lean might be one avenue for improving the situation.

a) Identify and explain <u>five</u> different sources of wastes at The Riewoldt School. [10 marks]

b) Discuss the steps you would recommend Lauren take in order to prepare her staff for the introduction of Lean thinking. [5 marks]

c) Identify <u>five</u> Lean tools and techniques that you view as most suitable for adoption as part of RSH's Lean implementation? Discuss how each might be applied in the School. [15 marks]

4. Mobile Ordering at Starbucks [20 marks]

Starbucks has recently received considerable press coverage due to problems it is experiencing with the introduction of its mobile ordering app. The app allows convenience-oriented customers to order and pay for their drink and food on a smartphone before entering the store. While the app was intended to reduce long lines at the cash register, its success has seen those lines just shift to the pickup counter.

An edited extract from an article (Business Insider, Mar 19 2017) discussing the experiences of the author who trialled the app every day for a week is described below:

> *"Mobile ordering has caused bottlenecks during busy hours at some of Starbucks' most popular locations. The crowds of customers waiting for their lattes and Frappuccinos have even started to discourage walk-in customers from entering stores. Some customers have become frustrated enough that they've cancelled their orders. Others have also taken to social media to complain about long mobile-order wait times.*
>
> *Starbucks baristas seem equally annoyed by mobile-ordering issues. Said one barista "Mobile ordering has singlehandedly killed the job for. Too many people use it now and it completely interrupts the work flow. It's just not how stores are set up." Another commented "I am not a glorified vending machine. I enjoy the banter and interaction with customers."*
>
> *While Starbucks promises that mobile orders will be ready within three to five minutes of placing an order, the chain fulfilled this promise in just one out of five visits. Three of my orders took roughly 10 minutes — more than twice as long as promised.*
>
> *The process was far from seamless. Customers crowded around in the back of the store waiting for their drinks. And baristas at times called out mobile orders for customers who were not yet there to pick up their beverages.*
>
> *There was also no discernible relationship between the numbers of people waiting in line and of people in the crowd waiting for their beverages. One of my longest waits, which took 10 minutes, 35 seconds, occurred when there was no line at the front of the store; another day, I received my drink in 4 minutes, 15 seconds despite a crowd of customers waiting to order. The worst part: Ordering via mobile didn't necessarily save time. Walking in, waiting in line, and ordering at the counter also took me about 10 minutes."*

a) In what ways has mobile-ordering affected service quality at Starbucks? [8 marks]

b) What do you see as the fundamental root cause driving the problems experienced with mobile-ordering? Discuss your reasoning. [6 marks]

c) One solution being trialled by Starbucks is adding a store that only takes mobile orders. What operations principle are they seeking to exploit? Do you think this initiative will be successful? Justify your answer. [6 marks]

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Tuesday 10 January 2017 14:00 to 16:00

Paper MME22
Supply Chain Management

*You should answer three questions in total. Answer **one** question from Section A and **any two** from a choice of three from Section B.*

*The **approximate** number of marks allocated to each part of a question is indicated in the right margin*

*Write your number **not** your name on the cover sheet*

STATIONERY REQUIREMENTS
20 Page Answer Booklet

Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
No calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

SECTION A

For want of a piston ring costing $1.50, nearly 70% of Japan's auto production has been temporarily paralyzed this week. Blame it on kanban, the just-in-time philosophy of keeping as little inventory on hand as possible. The strategy keeps inventory costs down and ensures quality. It generally works because Japan's auto makers have long prided themselves on the almost familial relationships they have with a handful of suppliers of custom parts that deliver several times a week or even daily.

The strategy also has a downside, as became evident after the 6.8- magnitude earthquake that hit central Japan on Monday damaged Riken Corp. Riken, which has 1,500 employees and revenue of $631.3 million in the year ended March 31, is one of the few suppliers focusing on such specialized parts as piston rings, which fit around the head of the piston to create a seal that traps combustion gases and minimizes oil burning. With market share of more than 50%, Riken has a reputation for quality and a close relationship with many car makers.

Riken, which is sole supplier to all major Japanese car makers, makes the sought-after $1.50 piston ring but has been unable to make deliveries. And because piston rings and other key parts are made specifically for each car maker and little inventory is kept in hand, it is nearly impossible for auto makers to simply switch to another supplier at the last minute. "It's very difficult [for Japanese auto makers] to hedge any risks," says Hirofumi Yokoi, a Tokyo-based manager at auto-industry consultancy CSM Worldwide.

The Riken closure has forced Toyota Motor Corp., the nation's No. 1 car maker by sales, to cease production for at least a day and a half at all 12 of its domestic plants, causing a loss of output of at least 25,000 vehicles, about 60% of which are made for export. It's not clear what impact the disruption at Riken will have on U.S. production of Japanese cars. "We are investigating and communicating with our colleagues in Japan to see whether or not there will be an impact," said Victor Vanov, a spokesman for Toyota's U.S. manufacturing operations.

- *Adapted from Chozick, A. "A Key Strategy of Japan's Car Makers Backfires" Wall Street Journal, Jul 20, 2007.*

Required:

(a) Position the piston ring on an appropriate sourcing framework. Justify your answer.

(5 marks)

(b) What changes might you recommend to Toyota's approach for sourcing this item? Critically evaluate the pros and cons of the various options you propose.

(25 marks)

SECTION B

1 Many companies have historically adopted a one-size-fits-all approach to managing their supply chains. Latterly, the principle of segmentation has become recognised as a critical insight for supply chain managers. One example is in designing different supply chain structures which help reconcile potentially conflicting goals between demand variability and supply chain cost.

Discuss the different ways in which companies have applied the principle of segmentation in their supply chain strategies, structures and sourcing processes.

(35 Marks)

2 The Vice President of Supply Chain at a major fast food restaurant chain was recently quoted as saying “We don’t have any contracts in place with our key food and packaging suppliers. A gentlemen’s handshake is just as powerful.”

To what extent do you think this reflects a naïve view of managing supplier relationships?

(35 Marks)

3 The social auditing regime of suppliers is ‘working’ for the factory owners and buying companies, but failing workers. Discuss.

(35 marks)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Friday 12 January 2018 9:00 to 11:10

Paper MM1

QUANTITATIVE TECHNIQUES FOR MANAGEMENT

You must answer all questions.

You have two hours to complete the test including 10 minutes for reading.

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

At the end of the test: Please remain seated until your test paper and answer booklet have been collected; unwanted scrap paper will be collected and disposed of. Please remain silent until you have left the test room.

Each of five test questions is worth 20 marks out of 100.

N.B. THE FINAL TWO SHEETS OF THIS PAPER ARE SPECIAL DATA SHEETS

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

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QUESTION 1

(a) A formal study of nonfatal occupational injuries in the medical literature found that about 35% of all injuries in the service sector involved in the back. A year ago, an international postal service firm implemented a new strategy, called LEAN, to help the delivery force of the firm to be not only more productive but also to reduce injuries for delivery drivers in the working hours. Using a sample of 1600 delivery drivers who have been working for the firm in the last five years, the firm collected the following data:

	Average delivery time	Standard deviation of delivery time	Proportion of injuries
Year 1 (without LEAN)	8.10 hours	2.80 hours	1.8%
Year 2 (with LEAN)	7.80 hours	2.60 hours	1.0%

(i) At 10% significance level, what can you say about the new strategy LEAN on the average delivery time? Conduct a formal hypothesis testing to support your conclusion.

(ii) Assume that 1.8% in the above table represents the proportion of injuries for delivery drivers of the retailer in the past history. At the 5% significance level, what can you say about the new strategy LEAN on the proportion of injuries? Conduct a formal hypothesis testing to support your conclusion.

(TURN OVER)

QUESTION 2

(a) The Children Shelter is an international healthcare organisation of protecting children in the world. Their management wishes to understand infant mortality and reduce the global infant mortality rate (deaths per 1,000 births). An analyst in the Children Shelter was asked to conduct some regression analysis in hope of identifying major causes for infant mortality. The analyst collected data on two variables: female literacy (percent who read, e.g., the value for this variable is 50 if the literacy for a country is 50%) and population density (people per square kilometre) for 85 countries. Using the data, the analyst generated two Summary Outputs, one for simple regression and another for multiple regression, as shown in the tables below.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.18530971
R Square	0.03433969
Adjusted R Square	0.02270523
Standard Error	37.855725
Observations	85

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4229.735542	4229.736	2.95155	0.08952389
Residual	83	118943.6409	1433.056		
Total	84	123173.3765			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	53.3489342	4.280532376	12.46315	1.05E-20	44.8351275	61.862741	46.2286103	60.46925816
Density	-0.00932136	0.005425683	-1.718007	0.089524	-0.02011283	0.0014701	-0.0183466	-0.00029617

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.85868057
R Square	0.73733232
Adjusted R Square	0.73092579
Standard Error	19.8634561
Observations	85

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	90819.71153	45409.86	115.0908	1.56918E-24
Residual	82	32353.66494	394.5569		
Total	84	123173.3765			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	128.596114	5.553822295	23.15452	1.01E-37	117.5477922	139.644436	119.3565021	137.8357259
Density	-0.0081126	0.002848105	-2.8484	0.005553	-0.013778341	-0.0024468	-0.0128508	-0.003374306
Literacy	-1.1227776	0.075790498	-14.8142	6.74E-25	-1.273549085	-0.9720062	-1.248866441	-0.99668884

(i) Specify the multiple regression equation and explain the variables and parameters in the equation.

(ii) For the multiple regression, with a 90% confidence level, what range of infant mortality rates would you expect for a particular country in which the Density is 200 and the Literacy score is 80 (meaning 80%)? How would you present your result to the Children Shelter?

(iii) Based on the multiple regression equation, what would be the range of values for the change of the infant mortality rate if the literacy is decreased by 10%?

(iv) For the simple regression, explain the relationship between the t-statistic and the p-value for the slope.

(v) Compare the results for the simple regression and the multiple regression and highlight some key differences.

(TURN OVER)

QUESTION 3

(a) Suppose the daily revenue for a firm is equal to the daily demand times the daily price. The daily price and the daily demand are uncertain and they are correlated with a correlation coefficient r. The daily price is of a normal distribution. The daily demand is equal to a linear function of the daily price plus a noise term which can be represented by a normal distribution. You are asked to use a Monte Carlo simulation approach to estimate the total average daily revenue for the firm.

(i) Describe how you should draw observations of price and demand for the following two scenarios: (1) r = 0, (2) r = -0.8.

(ii) Define the flaw of averages and illustrate it with this example.

(b) Consider two assets *X* and *Y* which have uncertain outcomes and assume their correlation coefficient is *r*. Assume $v = \alpha X + (1-\alpha) Y$ is a portfolio, where α ($0 \leq \alpha \leq 1$) is the weight.

(i) Assume that *X* and *Y* have the same variance. Discuss when and why portfolio *v* has a variance that is smaller than the variance of *X*.

(ii) Suppose that you consider two risk measures: variance and semi-variance, and you construct two risk-return scatter diagrams based on these two risk measures. How do you choose portfolios based on these two risk-return scatter diagrams?

QUESTION 4

(a) PicaTure produces four types of picture frames, which we label 1, 2, 3, and 4. The four types of frames differ with respect to size, shape, and materials used. Each type requires a certain amount of skills labor, metal, and glass, as shown in the table below. This table also lists the unit selling price PicaTure charges for each type of frames. In the next week, PicaTure can purchase up to 4000 hours of skilled labor, 6000 ounces of metal, and 10,000 ounces of glass. The unit costs are £8.00 per labour hour, £0.50 per ounce of metal, and £0.75 per ounces of glass. The market analysis shows that PicaTure can sell up to 1000 type-1 frames, 2000 type-2 frames, 500 type-3 frames, and 1000 type-4 frames. Based on the tradition, PicaTure prefers that the total number of frames of type 1 and type 2 does not exceed the half of the total number of frames of all four types.

	Frame 1	Frame 2	Frame 3	Frame 4
Skilled labor	2	1	3	2
Metal	4	2	1	2
Glass	6	2	1	2
Selling price	£27.0	£12.50	£29.0	£21.5

(i) PicaTure wants a production plan for the next week. Formulate this problem as a linear program for maximising the profit for PicaTure.

(ii) Describe how you revise the linear programming formulation that you propose in (*i*) if PicaTure wishes to use exactly 4000 hours of skilled labor, 6000 ounces of metal, and 10,000 ounces of glass. Argue that potentially which linear programming formulations between the one in (*i*) and the one in (*ii*) would give a higher optimal objective function value.

(iii) Suppose the linear program that you formulate in (*i*) is solved by Solver, an Excel add-in. Describe how the optimal solution and the optimal objective function value change when either the selling price for type-1 frames or the number of labor hours changes.

(TURN OVER)

QUESTION 5

(a) Sunny is a product manager at MeDevice and she seeks to determine whether her company should market a new brand of drug. If this new drug succeeds in the marketplace, MeDevice estimates that it would earn £1,800,000 in future profits from the sale of the new drug. If this new drug fails, however, the company expects that it could lose approximately £750,000. If MeDevice chooses not to market this new drug, the product manager believes that there would be little, if any, impact on the profits earned through sales of MeDevice's other products. Sunny has estimated that the new drug will succeed with probability 0.5. Before making her decision regarding this drug, Sunny can spend £75,000 on a market research study. Such a study of consumer preferences will yield either a positive recommendation with probability 0.5 or a negative recommendation with probability 0.5. Given a positive recommendation to market the new drug, the new drug will eventually succeed in the marketplace with probability 0.75. Given a negative recommendation regarding the marketing of the new drug, the new drug will eventually succeed in the marketplace with probability 0.25. Assume Sunny and MeDevice will make a decision of maximising the expected monetary value (EMV).

(i) Construct a decision tree for MeDevice.

(ii) What is the optimal decision strategy for MeDevice, and what is the EMV for MeDevice? Support your answers with calculations.

(iii) For the optimal contingency plan/decision that you identify in (*ii*), specify the corresponding risk profile.

END OF PAPER

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(TURN OVER)

SPECIAL DATA SHEET 1
Formula sheet

Standard errors

$$STEM = \frac{\sigma}{\sqrt{n}} \approx \frac{s}{\sqrt{n}}, \quad STEP = \sqrt{\frac{p(1-p)}{n}} \approx \sqrt{\frac{q(1-q)}{n}},$$

$$STEDM = \sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2}} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}.$$

Covariance, Correlation and Regression

Consider data pairs (X_1, Y_1), (X_2, Y_2), …, (X_n, Y_n).

Let m_X and m_Y denote the respective means of the X and Y data.

Let s_X and s_Y denote the respective standard deviations of the X and Y data.

Covariance between X and Y is given by

$$\mathrm{cov}(\mathrm{X}, \mathrm{Y}) = \frac{\sum_{i=1}^{n} (\mathrm{X}_i - m_\mathrm{X})(\mathrm{Y}_i - m_\mathrm{Y})}{n} = \frac{\sum_{i=1}^{n} \mathrm{X}_i \mathrm{Y}_i}{n} - m_\mathrm{X} m_\mathrm{Y}$$

The correlation coefficient between X and Y is given by

$$\mathrm{correl}(\mathrm{X}, \mathrm{Y}) = r = \frac{\mathrm{cov}(\mathrm{X}, \mathrm{Y})}{s_\mathrm{X} s_\mathrm{Y}}.$$

The line of best fit is given by

$$\mathrm{Y} - m_\mathrm{Y} = \frac{r s_\mathrm{Y}}{s_\mathrm{X}} (\mathrm{X} - m_\mathrm{X}).$$

Variance of a portfolio

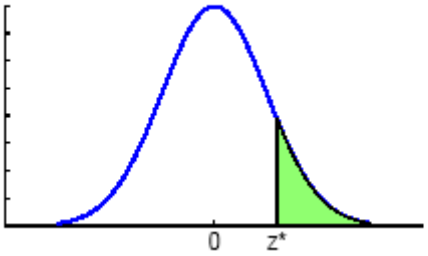
Consider three random variables x, y and z with means m_x, m_y, and m_z, respectively; variances Var(x), Var(y), and Var(z), respectively; and covariance between x and y, for example, given by the formula above. Given any numbers α_x, α_y, α_z, let $v = \alpha_x x + \alpha_y y + \alpha_z z$. Then the variance of v is given by

$$\begin{aligned}\mathrm{Var}(v) = {} & \alpha_x{}^2 \mathrm{Var}(x) + \alpha_y{}^2 \mathrm{Var}(y) + \alpha_z{}^2 \mathrm{Var}(z) \\ & + 2\left(\alpha_x \alpha_y \mathrm{cov}(x, y) + \alpha_y \alpha_z \mathrm{cov}(y, z) + \alpha_x \alpha_z \mathrm{cov}(x, z)\right)\end{aligned}$$

SPECIAL DATA SHEET 2

Standard Normal Distribution Table

(Areas under the standard normal curve beyond z*, i.e., shaded area)



z^*	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Wednesday 10 January 2018 9:00 to 11:10

Paper MM2

Marketing

*Answer **two** questions*

*Both questions carry 50 marks each. The **approximate** number of marks allocated to each part of a question is indicated.*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Approved calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

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1 *(a)* Briefly explain what is ‘status quo bias’; illustrate your answer with one example. **[10 marks]**

(b) Discuss the importance of status quo bias as a factor influencing the adoption of innovations. **[15 marks]**

(c) Discuss whether the sportswear brand Nike should launch a major product line of denim jeans (the brand currently does not have such a line). **[25 marks]**

2 *(a)* Briefly discuss three factors that can reduce consumers’ price sensitivity to a product or service. **[15 marks]**

(b) In the UK, it is safe to drink water from the tap. Discuss why bottled water can still attract a substantial demand in the UK market at price levels that are potentially much higher than the costs of the materials (water and bottle). **[15 marks]**

(c) Imagine that you are the marketing manager of a new brand of bottled mineral water. The product is bottled at a factory with water from a generic source with no points of differentiation, and with minerals added artificially. Discuss how you would market the product so that it can command a brand premium. **[20 marks]**

3 *(a)* Briefly explain the idea of ‘gravity of decision spectrum’ in the context of market segmentation. Using this idea and/or other arguments, discuss why psychographic segmentation is more applicable to some products or services than others. Illustrate your answer with one example to which psychographic segmentation is more applicable, and another one to which it is less so. **[20 marks]**

(b) MBA programmes often have higher tuition fees than many graduate programmes. Discuss the segmentation, targeting, and positioning implications of this strategy. **[30 marks]**

4 *(a)* Briefly explain the ‘best alternative to a negotiated agreement’ (BATNA) and the ‘zone of possible agreement’ (ZOPA) in price bargaining. **[20 marks]**

(b) Discuss the insights on bargaining that you have learned from Case Exercise Session 2 (the Renotcin case). **[30 marks]**

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Monday 23 April 2018 9:00 to 11:10

Paper MM3

BUSINESS ECONOMICS

*You have **2 hours** to complete the exam and 10 minutes of reading time.*

***Answer all problems/parts**: Part I (problem) counts for 32 points, Part II (Multiple Choice part) for 36 points, Part III (Discussion) for 32 points. Total is 100 points.*

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

*Illegible (difficult to read) answers will **not** receive credit.*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

PART I (32 points)

As the owner of the only tennis club in an isolated wealthy community, you must decide on membership fees and a price for court time. There are two types of tennis players. “Serious” players have demand

$$Q_1 = 10 - P$$

where Q_1 is court hours per week and P is the price for court time per hour for each individual player. There are also “occasional” players with demand

$$Q_2 = 4 - 0.25P$$

Assume that there are 1,000 players of each type. Because you have plenty of courts, the marginal cost of court time is zero. You have fixed costs of £10,000 per week.

A. Serious and occasional players look alike, so you cannot distinguish them. Suppose that to maintain a “professional” atmosphere, you want to limit membership to serious players only. How should you set the annual membership fees and price for court time (assume 52 weeks per year) to maximize profits, keeping in mind the constraint that only serious players choose to join? What would profits be (per week)?

B. A friend tells you that he found a smart way to distinguish the “serious” from the “occasional” players and suggests charging them different prices for court time (without any membership fees) that would increase your profits. What prices would maximize weekly profits? What are your profits overall? Is your friend right?

C. Calculate the consumer surplus and deadweight loss of the “serious” and “occasional” players in the previous two subquestions. Which pricing policy each type of player would prefer? Which pricing policy leads to the smallest deadweight loss for each type of player?

PART II (36 points, 3 points each)

Answer by writing the question number and the letter of one correct answer.

1. The price elasticity of demand can be interpreted as the:
A) percentage change in the quantity demanded divided by the percentage change in the good's price.
B) percentage change in the quantity demanded divided by the percentage change in a substitute good's price.
C) percentage change in the good's price divided by the percentage change in quantity demanded.
D) change in the quantity demanded of a good divided by the change in its price.
E) change in the quantity demanded of a good divided by the change in a related good's price.

2. If price is £25 when the price elasticity of demand is −0.5, then marginal revenue must be:
A) £50
B) −£25
C) £12.50
D) £37.50
E) £25

3. Consumer surplus is important to firms because:
A) it represents value consumers receive that they do not pay for.
B) market prices must incorporate consumer surplus.
C) they must pay taxes based on the level of consumer surplus.
D) if firms can capture it, they can increase their profitability.
E) a and d.

4. The law of diminishing marginal returns is obvious because, if it didn't hold, it would be possible to:
A) feed everyone in the world by intensively cultivating one acre of land.
B) manufacture all of the cars in the world using just one of the world's existing factories.
C) increase total output of a product without employing additional inputs.
D) All of the above.
E) a and b.

5. Minimum efficient scale is the output at which:
A) long-run average cost is first minimized.
B) long-run average cost first equals long-run marginal cost.
C) short-run average cost equals long-run average cost for the first time.
D) short-run marginal cost equals long-run marginal cost for the first time.
E) diseconomies are first overcome and then economies of scale set in.

(TURN OVER)

6. In the model of perfect competition, firms maximize profits by producing where:
A) the difference between marginal revenue and marginal cost is maximized.
B) marginal revenue equals price.
C) the difference between price and marginal cost is maximized.
D) price equals marginal cost.
E) the difference between price and marginal revenue is maximized.

7. The Frank Failing Company has an average variable cost of £8, average fixed cost of £16, marginal cost of £12, and elasticity of demand −3. Frank should:
A) shut down.
B) charge £8.
C) charge £16.
D) charge £18.
E) charge £36.

8. The reservation prices, in dollars, for three classes of demanders (A, B, and C) for three restaurants (1, 2, and 3) are given in the following table. What is the maximum revenue that can be generated by setting a bundled price for the three restaurants?

	Restaurant		
Class	1	2	3
A	12	5	8
B	7	10	10
C	9	15	6

A) £59
B) £75
C) £81
D) £89.
E) None of the above.

9. Duopolists A and B face the following demand curves: $Q_A = 100 - 2P_A + 5P_B$ and $Q_B = 120 - 3P_B + 4P_A$. If both firms have zero marginal cost, what are the profit maximizing prices and quantities?
A) $P_A = 300$, $Q_A = 600$, $P_B = 220$, $Q_B = 660$
B) $P_A = 200$, $Q_A = 400$, $P_B = 200$, $Q_B = 400$
C) $P_A = 200$, $Q_A = 700$, $P_B = 200$, $Q_B = 320$
D) $P_A = 300$, $Q_A = 750$, $P_B = 250$, $Q_B = 570$
E) $P_A = 300$, $Q_A = 1{,}250$, $P_B = 350$, $Q_B = 270$

10. Given the following payoff diagram:

		Firm 2	
		Aggressive	Passive
Firm 1	Aggressive	40,10	55,15
	Passive	50, 25	70, 20

By how much can firm 1 improve its outcome by committing to a strategy thus transforming the simultaneous move game to a sequential move game?

A) 5
B) 10
C) 15
D) 20
E) 25

11. Which of the following is the best example of adverse selection?

A) Smokers are more likely to obtain health insurance.
B) Safe drivers tend to get auto insurance.
C) All drivers are required to have auto insurance if they are to register their cars legally.
D) Both healthy and unhealthy people tend to buy life insurance.
E) Given the existence of government-funded flood insurance, people continue to build homes in floodplains.

12. Which of the following is not a result of the holdup problem?

A) More difficult contract negotiations and more frequent renegotiations
B) Investments to improve ex post bargaining positions
C) Reduction in the transaction costs of arm's length market exchanges
D) Distrust
E) Reduced investment in relationship-specific investments

(TURN OVER)

PART III (32 points)

"ONLY about a dozen countries, mainly in eastern Europe, drink more than the British. Adult Britons each glug the equivalent of 500 pints of beer a year, a habit which kills 7,000 of them annually. The Scots, who are the thirstiest of the bunch, are determined to cut down. On February 26th their devolved government set a minimum price for alcohol of 50p ($0.70) per unit (equivalent to roughly half a pint of beer or a small glass of wine). The policy is likely to sober up some of the heaviest drinkers." *The Economist*, March 1, 2018.

Analyze the advantages and disadvantages of the price floor regulation for consumers, producers and the society overall.

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Thursday 19 April 2018 9:00 to 11:10

Paper MM4

STRATEGY

You must answer either question 1 or question 2. The exam is strictly closed book.

You have two hours to complete the examination and an additional 10 minutes of reading time.

*Write your number **not** your name on the cover sheet of **each** Section booklet.*

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

At the end of the examination: Please remain seated until your test paper and answer booklet have been collected. Please remain silent until you have left the test room.

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

QUESTION 1

WORLDWIDE MEAT (WWM)

Worldwide Meat (WWM) is a USD 12 billion meat processing business (slaughter, processing, and packing). Founded in 1953, WWM has grown to become the largest beef and pork processor in the U.S.A., and also has a growing export market to Japan. WWM revenues come 90% from beef and 10% from pork. The company delivers USDA-graded meats* primarily to the institutional (schools, prisons and hospitals) and supermarket channels. WWM delivers standard and select meat to the institutional channel, and select and choice meat to the supermarket channel. WWM entire value chain is organized toward delivering products at the industry's lower-per-volume costs. The price for WWM main raw materials (cattle and swine feedlots), are determined in the commodity markets. Minimum start-up costs in the meat processing industry are relatively high, and only three companies, including WWM, control 80% of the market for processed meats. Yet, the American and Japanese end consumers increasingly favor poultry and other non-animal proteins over beef and pork. Supermarkets are also relatively concentrated at a regional level.

(Adapted from Carpenter & Dozier, 2003)

* United States Department of Agriculture (USDA) main grades are: standard, select (the grade most commonly sold), choice, and prime (less than 5% of the meat sold in the USA, primarily to upscale hotels and restaurants). The grades are based on two main criteria: the intramuscular fat in the animal rib eye and the age of the animal prior to slaughter. Organic meat, which is produced without hormones, pesticides or other chemicals, is not USDA-graded.

Question 1.a.
Based on the data provided above and explicitly using the frameworks and concepts introduced and examined in class and in the strategy readings as well as comparisons with specific examples, provide an analysis of the U.S. meat-processing industry. Who has the power in that industry, and what macro-environmental factors are most likely to influence its structure in the short and medium terms? Also discuss how the forces and factors are affecting WWM. (30%)

Question 1.b.
Explicitly using the frameworks and concepts introduced and examined in class and in the strategy readings as well as comparisons with specific examples, define generic strategies, and identify what generic strategy WWM has chosen to implement. Is it appropriate for its industry? (20%)

Question 1.c.
Explicitly using the frameworks and concepts introduced and examined in class and in the strategy readings as well as comparisons with specific examples, define the resource-based approach and the value chain, and use them both to assess the risks that WWM is accepting by adopting this particular strategy. (30%)

Question 1.d.
Based on your analysis, what alternative strategies could WWM adopt to decouple itself from the ups and downs of commodity markets? What would the firm need to do to successfully implement these alternative strategies? (20%)

(TURN OVER)

QUESTION 2

Explicitly use (a) relevant strategy frameworks and concepts introduced and examined in class and in the strategy readings and (b) specific examples discussed in class, in the strategy readings or taken from your own work experience to answer the following questions:

Question 2.a.

In the context of Michael Porter's generic strategies, discuss the likely outcomes for organizations that try to simultaneously pursue low cost and differentiation strategies. (30%)

Question 2.b.

What options do organizations have to grow their operations, and how may they address the challenges that growth entails? (20%)

Question 2.c.

Describe the multi-sided market framework. What key insights does this relatively new approach bring to strategic management? (30%)

Question 2.d.

What strategy tools and frameworks may an organization use to protect a newly created uncontested market space (in other words, a “blue ocean”)? (20%)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Thursday 11 January 2018 9:00 to 11:10

Paper MM5

ORGANISATIONAL ANALYSIS

*Answer **two** from **four** questions*

Answer each question in a new booklet

All questions carry the same number of marks

The approximate percentage of marks allocated to each part of the examination question is indicated for each section

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
None

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

QUESTION 1

1. You work as a general manager for a multinational enterprise. You are in charge of recruiting a Sales manager. Two pieces of information provided to you contain the MBTI and Big 5 personality profiles of all candidates.

a. How would you use the information presented to you for informing your decision? (70% of marks)

b. How would you integrate this information with other personnel selection tools (i.e., information from interviews, various Assessment Center exercises) to inform your decision? (30% of marks)

QUESTION 2

2. You work as a general manager for a multinational enterprise. One of the employees in your department seems not to live up to her/his full potential. You suspect this is due to lack of motivation.

a. Briefly outline the key tenants of three different motivational theories of your choice that could serve you to increase the motivation of that employee. (50% of marks)

b. Explain how you would apply these theories in order to increase this employee's motivation. (50% of marks)

QUESTION 3

Gap Travel is an adventure travel agency that specialises in selling travel opportunities in which customers spend between 3 and 6 months living and working in local communities. The senior management team of Gap Travel comprises 8 people and the company employs 100 customer advisors and 20 administrative staff. The company takes pride in close relationships with customers and promotes the claim that its adventure holidays support local communities and help make the world a little bit better for everyone. You have been appointed to advise the new managing director of Gap Travel.

a. One of your first responsibilities is to develop a workshop to help the new managing director work effectively with the senior management team. The workshop will last 3 hours. What will you include in the workshop? (50% of marks)

b. Discuss three key challenges associated with enabling the leadership team to perform at its best? (50% of marks)

QUESTION 4

You work for the management consulting organization Group One which specializes in advising companies seeking to develop online product and service provision. The new client of Group One is Gem Co., a high street jewellery retailer. The senior management team at Gem Co. are seeking advice on how to establish a new department which will sell the company's products online.

a. Your first task is to advise Gem Co. about the implications of establishing a new department on the organization's culture. What will you say to the senior management team at Gem Co. about how organizational culture is created? (50% of marks)

b. Gem Co. anticipate that 20 employees will work in the new internal division with responsibility for online retailing. Examine how any tensions between the high street and online retailing departments will be managed. (50% of marks)

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Wednesday 18 April 2018 9:00 to 11:10

Paper MM6

FINANCE

This is a two hour written paper with an additional 10 minutes of reading time

You must answer all questions

Write in pen. Enter your answers in the booklet provided. Always indicate which question you are answering at the top of any page used. Rough/scrap paper is provided only for your private calculations, if needed. Scrap/rough paper will not be used for assessment.

At the end of the test: Please remain seated until your test answer booklet has been collected; unwanted scrap paper will be collected and disposed of. Please remain silent until you have left the test room.

N.B. AT THE END OF THIS PAPER ARE SPECIAL DATA SHEETS AND PRESENT VALUE TABLES

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

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[1]This is the Subject Code

QUESTION 1 [30 marks – 2.5 marks per question]

1. The common stock of Energizer's pays an annual dividend that is expected to increase by 10% annually. The stock commands a market rate of return of 12% and sells for $60.50 a share. What is the expected amount of the next dividend to be paid on Energizer's common stock?

2. Walks Softly, Inc. sells customized shoes. Currently, it sells 10,000 pairs of shoes annually at an average price of $68 a pair. It is considering adding a lower-priced line of shoes which sell for $49 a pair. Walks Softly estimates it can sell 5,000 pairs of the lower-priced shoes but will sell 1,000 less pairs of the higher-priced shoes by doing so. What is the amount of the sales that should be used when evaluating the addition of the lower-priced shoes?

3. Kay's Nautique is considering a project which will require additional inventory of $128,000 and will also increase accounts payable by $45,000 as suppliers are willing to finance part of these purchases. Accounts receivable are currently $80,000 and are expected to increase by 10% if this project is accepted. What is the initial project cash flow needed for net working capital?

4. The stock of Big Joe's has a beta a 1.14 and an expected return of 11.6%. The risk-free rate of return is 4%. What is the expected return on the market?

5. An unlevered firm has a cost of capital of 14% and earnings before interest and taxes of $150,000. A levered firm with the same operations and assets has both a book value and a face value of debt of $700,000 with a 7% annual coupon. The applicable tax rate is 35%. What is the value of the levered firm?

6. Gail's Dance Studio is currently an all equity firm that has 80,000 shares of stock outstanding with a market price of $42 a share. The current cost of equity is 12% and the tax rate is 34%. Gail is considering adding $1 million of debt with a coupon rate of 8% to her capital structure. The debt will be sold at par value. What is the levered value of the equity?

7. A firm has a debt-to-equity ratio of .60. Its cost of debt is 8%. Its overall cost of capital is 12%. What is its cost of equity if there are no taxes or other imperfections?

8. A firm has a debt-to-equity ratio of 0.5. Its cost of equity is 22%, and its cost of debt is 16%. If the corporate tax rate is .40, what would its cost of equity be if the debt-to-equity ratio were 0?

9. The Nantucket Nugget is unlevered and is valued at $640,000. Nantucket is currently deciding whether including debt in its capital structure would increase its value. The current cost of equity is 12%. Under consideration is issuing $300,000 in new debt with an 8% interest rate. Nantucket would repurchase $300,000 of stock with the proceeds of the debt issue. There are currently 32,000 shares outstanding and its effective marginal tax bracket is 34%. What will Nantucket's new WACC be?

10. The Webster Corp. is planning construction of a new shipping depot for its single manufacturing plant. The initial cost of the investment is $1 million. Efficiencies from the new depot are expected to reduce costs by $100,000 per year and forever. The corporation has a total value of $60 million and has outstanding debt of $40 million. What is the NPV of the project if the firm has an after-tax cost of debt of 6% and a cost equity of 9%?

11. The Tip-Top Paving Co. wants to be levered at a debt to value ratio of 0.6. The cost of debt is 11%, the tax rate is 34%, and the cost of equity for an all equity firm is 14%. What will be Tip-Top's cost of equity?

12. Quick-Link has debt outstanding whose market value is $200 million, and equity outstanding with a market value of $800 million. Quick-Link is in the 34% tax bracket, and its debt is considered risk free. Merrill Lynch has provided an equity beta of 1.50. Given a risk-free rate of 3% and an expected market return of 12%, calculate the discount for a scale enhancing project in the hypothetical case that Quick-Link is all equity financed.

<u>QUESTION 2</u> [30 marks]

Judge Industries plc., based in the Silicon Fen area, a well-known technology cluster in the city of Cambridge, United Kingdom, is considering an investment project to produce a new advanced robot for use in hospitals. The market for this robot is growing quickly.

The company bought some land three years ago for £1 million in anticipation of using it as a toxic waste dump site but has recently hired another company to handle all toxic materials. This land is now available and can be used as the production site for the project. Based on a recent appraisal, the company believes it could sell the land for £800,000 on an after-tax basis.

(TURN OVER)

The company also hired a marketing firm to analyze the robot market, at a cost of £125,000. An excerpt of the marketing report is as follows: "*The robot industry will have a rapid expansion in the next four years. With the technology that Judge Industries possesses, we feel that the company will be able to sell 2,900; 3,800; 2,700; and 1,900 units of this new robot each year for the next four years, respectively. Again, capitalizing on Judge Industries' technology, we feel that a premium price of £700 can be charged for each robot. Because the technology will be obsolete, we feel at the end of the four-year period, sales should be discontinued.*"

Judge Industries plc. feels that the fixed cost for the project will be £350,000 per year, and variable costs are 15 percent of sales. The equipment necessary for production will cost £3.8 million and will be depreciated according to the schedule below. At the end of the project, the equipment will be scrapped for £400,000. An initial net working capital of £120,000 will be required before the production starts. The company has a 38 percent tax rate, and the required rate of return on the project is 15 percent.

What is the NPV of the project? Assume the company has other profitable projects.

Annual depreciation as a percentage of the cost of initial investment

Year	1	2	3	4
Depreciation	*33.30%*	*44.40%*	*14.80%*	*7.50%*

QUESTION 3 [20 marks]

Suppose you observe the following situation:

State of Economy	**Probability of State**	**Return if State Occurs**	
		Stock A	**Stock B**
Bust	0.25	-0.10	-0.30
Normal	0.50	0.10	0.05
Boom	0.25	0.20	0.40

a. Calculate the expected return on each stock [**10 marks**]
b. Assuming the capital asset pricing model holds and stock A's beta is greater than stock B's beta by 0.2, what is the expected market risk premium? [**10 marks**]

QUESTION 4 [20 marks]

CamTech plc. is an unlevered firm with expected annual earnings before taxes of £35 million in perpetuity. The current required return on the firm's equity is 20 percent, and the firm distributes all of its earnings as dividends at the end of each year. The company has 1.5 million shares of common stock outstanding and is subject to a corporate tax rate of 35 percent. The firm is planning a recapitalization plan under which it will issue £40 million of perpetual 9 percent debt and use the proceeds to buy back shares.

a. Calculate the value of the company before the recapitalization plan is announced. What is the value of equity before the announcement? What is the price per share **[5 marks]**
b. Use the APV method to calculate the company value after the recapitalization plan is announced. What is the value of equity after the announcement? What is the price per share? **[5 marks]**
c. How many shares will be repurchased? What is the value of equity after the repurchase has been completed? What is the price per share? **[5 marks]**
d. Use the flow to equity (FTE) method to calculate the value of the company's equity after the recapitalization. **[5 marks]**

END OF PAPER

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SPECIAL DATA SHEET

1. *Present value of*

1.1 An annuity

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

1.2 A growing annuity

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

1.3 A perpetuity

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

1.4 A growing perpetuity

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

2. Bond value equation

$$\text{Bond Value} = C\left[\frac{1}{r} - \frac{1}{r(1+r)^T}\right] + \frac{\text{FV}}{(1+r)^{\text{T}}}$$

3. Cash Flow from Operations

OCF = EBIT + Depreciation – Current Taxes

OCF = (Sales – Costs) x (1 – T) + Depreciation x T

4. Net Capital Spending

Net Capital Spending = Purchase of fixed assets – Sales of fixed assets = Ending fixed assets – beginning fixed assets + depreciation

5. Changes in Net Working Capital (NWC Net Working Capital)

Net Working Capital (WC) = Total Current Assets – Total Current Liabilities
Change in NWC = Ending NWC – beginning NWC

6. Cash Flow from the Firm (Free Cash Flow; Cash Flow from the Asset)

FCF = Operating Cash Flow - Net Capital Spending - Change in NWC

7. <u>The Capital Asset Pricing Model (CAPM)</u>

$r_i = r_f + \beta_i \text{ x } (r_m - r_f)$

8. <u>The weighted average cost of capital</u>

$r_{WACC} = (\frac{D}{D+E})$ x $(1 - T_C)$ x r_D + $(\frac{E}{D+E})$ x r_E

9. M&M theorems without corporate taxes

$V_L = V_U$

$r_E = r_0 + \frac{D}{E_L} \times (r_0 - r_D)$

$$\beta_E = \beta_0 + (\beta_0 - \beta_D) \times \frac{D}{E_L}$$

10. M&M theorems with corporate taxes

$V_L = V_U + T_C \text{ x } D$

$r_E = r_0 + \frac{D}{E_L} \times (1\text{-}T_C) \times (r_0 - r_D)$

$$\beta_E = \beta_0 + \frac{D}{E_L} \times (1 - T_C) \times (\beta_0 - \beta_D)$$

11. Beta of the levered firm

When firm is levered, the beta of the levered equity will be:

- If the Beta of debt is zero:

$$\beta_{\text{Equity}} = \left(1 + \frac{\text{Debt}}{\text{Equity}} \times (1 - t_C)\right) \beta_{\text{Unlevered firm}}$$

- If the beta of debt is non-zero:

$$\beta_{\text{Equity}} = \beta_{\text{Unlevered firm}} + (1 - t_C)(\beta_{\text{Unlevered firm}} - \beta_{\text{Debt}}) \times \frac{B}{S_L}$$

12. APV, FTE, and WACC method for investment project

$$APV = \sum_{t=1}^{t=T} \frac{UCF_t}{(1+R_0)^t} + \begin{matrix}\text{Additional} \\ \text{effects of} \\ \text{debt}\end{matrix} - \begin{matrix}\text{Initial} \\ \text{investment}\end{matrix}$$

$$FTE = \sum_{t=1}^{t=T} \frac{LCF_t}{(1+R_E)^t} - \left(\begin{matrix}\text{Initial} \\ \text{investment}\end{matrix} - \begin{matrix}\text{Amount} \\ \text{borrowed}\end{matrix}\right)$$

$$NPV_{WACC} = \sum_{t=1}^{t=T} \frac{UCF_t}{(1+R_{WACC})^t} - \begin{matrix}\text{Initial} \\ \text{investment}\end{matrix}$$

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Tuesday 9 January 2018 9:00 to 11:10

Paper MM7

Accounting

*Answer **all** questions in **both** sections*

The approximate percentage of marks allocated to each part of the examination question is indicated for each section

STATIONERY REQUIREMENTS
20 Page Answer Booklet

Rough work pads

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Approved calculators allowed

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

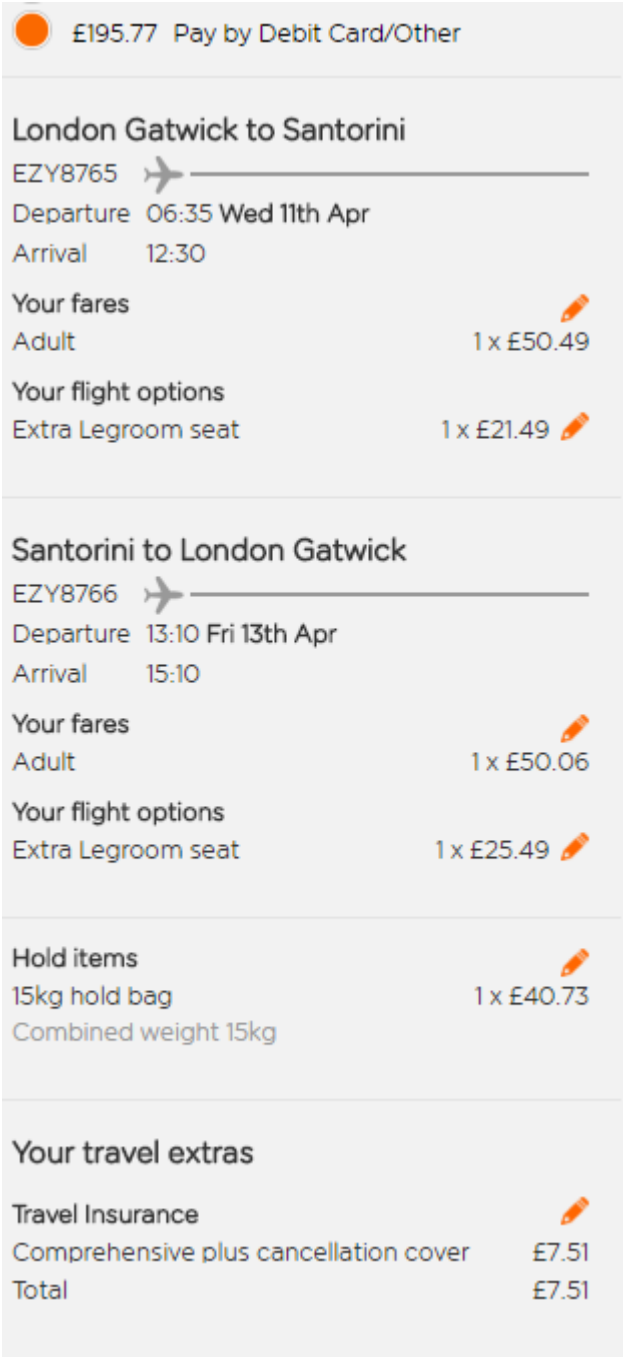
QUESTION 1 [*10 marks*]

In its 2016 annual report, Easyjet reports the following:[1]

> *Revenue recognition*
>
> *Revenue comprises seat revenue, being the value of airline services (net of air passenger duty and similar charges, VAT and discounts), and non-seat revenue. Seat revenue arises from the sale of flight seats, including the provision of checked baggage, allocated seating, administration, credit card and change fees. Seat revenue is recognised when the service is provided. This is generally when the flight takes place, but in the following cases, this is at the time of booking:*
>
> *• administration and credit card fees as they are contractually non-refundable; and*
>
> *• change fees as the service provided is that of allowing customers to change bookings.*
>
> *Amounts paid by 'no-show' customers are recognised as seat revenue when the booked service is provided as such customers are not generally entitled to change flights or seek refunds once a flight has departed. Unearned revenue represents flight seats, including the provision of checked baggage and allocated seating, sold but not yet flown and is held in the statement of financial position until it is realised in the income statement when the service is provided. Non-seat revenue arises from commissions earned from services sold on behalf of partners and is recognised when the service is provided. This is generally when the related flight takes place. In the case of commission earned from travel insurance, revenue is recognised at the time of booking as easyJet acts solely as appointed representative of the insurance company.*

Assume you pay £195.77 on 1 December 2017 for this flight itinerary (including options).

[1] http://corporate.easyjet.com/~/media/Files/E/Easyjet/pdf/investors/result-center-investor/annual-report-2016.pdf.



Requirements:

a. What happens when a company collects cash but has not yet earned the right to recognize that as revenue?
b. When should Easyjet recognize the revenue associated with this travel, scheduled for April 2018? Please explain your answers and why they agree or disagree with Easyjet's stated revenue policies.
c. Assume Easyjet starts selling electronic merchandise (e.g., cameras, gps units, and headphones) to interested passengers on its flights. How should it recognize revenue for these transactions?

(TURN OVER)

QUESTION 2 [*30 marks*]

On 31 December 2016, Animoji Corporation reported the following Balance Sheet:

Assets			Liabilities	
Cash	£10,000		Accounts Payable	£15,000
Accounts Receivable	£20,000		Notes Payable	£25,000
Land	£120,000		Long Term Loans	£140,000
Equipment (net of £10,000 accumulated depr.)	£90,000		Equity	
Research and Development	£60,000		Share Capital	£110,000
			Retained Earnings	£10,000

During 2017, Animoji had the following transactions occur:

1. Provided consulting services to customers. Billed them for £42,000.
2. Borrowed an additional £40,000, at the end of December 2017, from a bank (to be included in Long Term Loans).
3. Collected £27,000 from the customers billed in transaction 1.
4. Depreciated the equipment an additional £11,000.
5. Paid £11,000 in cash for internally-generated technological Research and Development during 2017.
6. Paid £2,000 cash for interest due on the Notes Payable and Long-Term Loans over the year.
7. Paid employee salaries of £15,000 for work completed during the year.
8. Received bills from the telephone, electric, and water service providers that Animoji owes a total of £4,000 for services used up during the year.
9. Impaired Research and Development Assets by £2,000.

Requirements:

a. Report a 2017 end-of-year Income Statement.
b. Report a 2017 end-of-year updated Balance Sheet.
c. Report a 2017 end-of-year Statement of Cash Flows.
d. What is your interpretation of the overall financial health of this company? Please explain your answer with a few sentences to support your analysis.
e. Explain how Animoji Corporation was able to recognize an asset called "Research and Development." What does this asset represent?
f. Assume that Gobble-Up Corporation buys all of the shares of Animoji Corporation immediately after Animoji presents its 31 December 2017 financial reports. Gobble-Up chooses to pay £300,000 for the entire company. In fewer than 500 words, describe how much you think Gobble-Up will report as Goodwill that relates to this purchase. How did you arrive at this estimate? What assumptions did you need to make? If this were a real scenario, who might you hire as consultants to help with this estimate?

QUESTION 3 [*10 marks*]

In a 2002 Wall Street Journal article ["Accounting Issues at WorldCom Speak Volumes About Disclosures"], the author writes (emphasis added):

"As investors worry about their ability to trust many companies' income statements, the WorldCom example shows how the single earnings figure at the bottom of an income statement is built on an array of management choices and estimates that can be tweaked to produce different results. ***Regulators and other accounting sleuths long have known that managers willing to manipulate results often focus on accounts receivable****."*

Requirements:

If managers are interested in manipulating earnings results, why might they "focus on accounts receivable" as suggested by the author of the article? In other words, how do the financial reporting rules handle the reporting of Accounts Receivable and how does this allow for potential earnings manipulation?

QUESTION 4 [*10 marks*]

Sam Antar, the convicted former Chief Financial Officer of Crazy Eddie, consistently says that:

"White collar criminals [and serial predators] build a wall of false integrity around them."

Requirements:

In 200 words or fewer, what does he mean by this? How does this help them commit a crime?

(TURN OVER)

QUESTION 5 [*10 marks*]

Consider the following advertisement for a vehicle purchase loan:

Requirements:

a. Why might someone be interested in buying a car today, but not having to make a payment for up to three months? What kind of buyer would likely choose this option?
b. If you purchased this car on 1 January 2018 for $17,344, entirely with a loan, and did not make any bi-weekly (i.e., a payment once every two weeks) payments until 26 March 2018, what was the balance of the loan before the first payment? Assume the interest rate is 1.9% annual. How much interest accrued while you did not pay off anything?
c. What is the balance of the loan after you make your first $118 payment on 26 March 2018?
d. Do you think this is a good business practice for car sellers to offer long periods before payments are due on the loans they offer? Why or why not?

END OF PAPER

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UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Monday 4 June 2018 14:00 to 16:15

Paper MM8

OPERATIONS MANAGEMENT

*Candidates should answer **all** 3 questions.*

*The **approximate** number of marks allocated to each part of a question is indicated on the paper.*

*Write your number **not** your name on the cover sheet.*

There is 15 minutes reading time and 2 hours writing time for this examination.

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
Calculator – students are permitted to bring an approved calculator

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

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[1]This is the Subject Code

1) Invoice Processing [30 marks]

An outsourcing company manages the invoice processing operations of several blue chip companies. The procedure is a mix of manual and automated processes, and consists of three stages. Invoices arrive in envelopes at the processing operation in batches of 150. The interval between the delivery of each batch varies, but on average one batch of invoices arrives every 30 minutes. In stage 1 the envelopes are opened manually by Worker 1 (10 sec per envelope). Once the entire batch of 150 has been processed (at stage 1) it is passed forward to stage 2, where a computer automatically scans the contents (4 sec per scan). Once the entire batch of 150 has been scanned (at stage 2), it is passed on to stage 3, where Worker 2 and Worker 3 email the scanned invoice to client companies (12 sec per invoice). The process operates for five hours per day.

a) Assuming no other invoices are in the system, what is the average throughput time (in minutes) to process a batch of 150 invoices? [3 marks]

b) Determine the capacity per hour for each stage of the process. Which stage is the bottleneck? [6 marks]

c) What is the average labour utilisation rate of the invoice processing operation? [4 marks]

d) As a recent operations graduate hired to improve the process you suggest reducing the transfer batch (the number of invoices processed before being moved to the next stage) from 150 to 30. Assuming no other invoices are already in the system, what will be the new average throughput time to process a batch of 150 invoices? [5 marks]

e) Your manager has asked you to describe three approaches to increase the capacity of the invoice processing operation. Consider the likely relative cost of implementing these changes and present them in order from cheapest to most expensive to implement. Explain the rationale for your ordering. [9 marks]

f) A quality control procedure is in place to assess the average processing time for Stage 1 – opening envelopes. A sample of 30 batches of invoices over the course of a week were checked. The mean processing time for Stage 1 was 24 minutes, with an upper and lower specification limit of 22 minutes and 26 minutes, respectively. The standard deviation was 35 seconds. Is the Step 1 (opening envelopes) process capable? [3 marks]

2) Call centre operations at Immersion Inc. [35 marks]

Immersion Inc. – one of three retailers in the UK who offer bundled mobile, television and broadband services – are considering their customer experience strategy. Pressure on margins has increased due to competition, while price-comparison sites have added to consumer power. In response, management are looking for ways to cut the cost of contact with customers, with call centres in particular seen as a higher-cost contact channel. Despite basing call centres in lower cost regions of the United Kingdom, hiring and training costs are relatively high, and grow quickly with an increase in staff attrition, a common problem in call centres. While consumers represent the vast majority of Immersion Inc.'s customer base, there is also a small, but rapidly-growing business unit providing a range of custom digital services to corporate clients.

For most of Immersion Inc.'s customers the call centre is the only direct interaction they have with the company. Analysis of their call centre data indicates that around 80% of customer interactions are short and simple, like billing, payments and checking minutes balances. The remaining 20% of calls are more complex and take longer to resolve, like adding services or technical faults. Wait times on hold and navigating the call centre menu options to reach the right team are common sources of customer frustration and complaints.

Management at Immersion Inc. are evaluating the deployment of Artificial Intelligence (AI) within their call centres to replace human call centre agents. Artificial intelligence, including automated chat bots, virtual assistants, automated voice recognition systems and predictive analytics, are hoped to address the cost challenges facing customer contact operations and improve the service experience.

a) How might the introduction of AI might affect a customer's service experience at Immersion Inc? [9 marks]

b) Discuss four operational decisions that would change as a result of the introduction of AI into their call centres? [8 marks]

c) What advice would you have for Immersion Inc's management on the feasibility of implementing AI? Are there other alternatives management might consider? [12 marks]

d) Where would you place Immersion Inc's call centre operations on the Service Process matrix? Justify your answer. [6 marks]

[TURNOVER]

3) Mail Processing at JFM Lawyers [35 marks]

One of the most common processes in a corporate office is ensuring incoming mail reaches the appropriate recipient for action. An operations management graduate from a top-ranked business school spent a week in the offices of JFM Lawyers and observed the following.

The mail delivery process begins at whatever time the mail is delivered by Royal Mail to the front desk. A mailroom clerk then moves the mail to a back office to be sorted. Once sorted into piles, mail was processed and scanned, with the computer system automatically sending the scans to the appropriate person's email address. Mail was paper-clipped together after processing. The processed mail was then also hand-delivered to individual offices later in the morning. Outside of the daily mail delivery, mailroom staff were also regularly walking up and down stairs to deliver late-arriving, but non-urgent mail, as well as urgent courier items.

A different process was in place for one senior partner, who required that he sign-off personally on all mail before it was distributed to his team. Often he was delayed in actioning this step. After this step was completed, the mailroom staff had to go and collect the mail again, resort it, and then hand deliver to recipients.

Other observations of the process included the following. The stationery cupboard was over-flowing with paper clips and everything in it was arranged in no particular order. It was impossible to accurately ascertain how much stock was held of any given stationery item. The mailroom supervisor collected information daily about the mail, including who it was from, who it was addressed to, where it was sent within the firm, and how many items were handled by the mailroom. Finally, much of the rework occurred due to varying preferences in the format in which corporate staff received their scanned mail; some preferred colour, some black and white; others wanted a single document and others preferred each page as a separate file. This rework was viewed as the fault of the mailroom, even though very few defects were truly their fault (e.g. unreadable scan).

a) Describe five forms of waste in this process [10 marks]

b) Using your knowledge of lean thinking, what actions would you recommend JFM take in response to the wastes you observe? [10 marks]

c) Data indicates that on average over the work day the mailroom has around 250 letters awaiting scanning. Most letters (90%) take around 30 seconds to be scanned, while the remaining 10% of letters are more complicated and take one-and-a-half minutes. How long after delivery to the front desk (in minutes), on average, does it take for a letter to be scanned into the system? [3 marks]

d) The newly appointed Operations Director at JFM is evaluating whether to implement Lean or Six Sigma at JFM. As a starting point, she would like you to evaluate the two process improvement methodologies, in particular highlighting their key areas of similarity and difference. [12 marks]

END OF PAPER

UNIVERSITY OF CAMBRIDGE

MGM7[1]
MPhil in Management

Monday 8 January 2018 9:00 to 11:10

Paper MME22

SUPPLY CHAIN MANAGEMENT

*You should answer three questions in total. Answer **all** questions in Section A, and **any two** from a choice of three from Section B.*

*The **approximate** number of marks allocated to each part of a question is indicated in the right margin*

*Write your number **not** your name on the cover sheet*

STATIONERY REQUIREMENTS
20 Page Answer Booklet
Rough Work Pad

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAMINATION
None

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

[1]This is the Subject Code

SECTION A

In 50 years of making bourbon barrels, no one had ever offered Leroy McGinnis more than what he charged for them. But over the past six months, multiple distillers have offered to pay him $250 a barrel—a 70% premium above the $150 list price. The offer illustrates just how scarce bourbon barrels have become. As bourbon sales have soared (up more than 35% in the last five years), both barrel production and the lumber industry have struggled to keep up.

Bourbon barrel making is nearly as complicated as bourbon making itself. Bourbon is aged a minimum of two years in new barrels made of white oak. Cooperages, which are what the barrel makers are called, fit oak planks known as staves together like puzzle pieces, encircle them with metal hoops, and ignite them with fire to create a char inside to colour and flavour whiskey. Prices of white oak staves have increased more than 20% in the last year. Current estimates are for 1.21 million barrels of white oak for US bourbon production, the first time since 1973 that barrel production has exceeded 1 million barrels.

These shortages reflect a supply-chain conundrum. Upstream, barrel makers face a wave of demand because a half dozen established bourbon distilleries and 300 new, craft distilleries are increasing production amid a bourbon boom. Downstream, they face a shortage of white oak wood used in barrels because the lumber industry hasn't rebounded from the housing market's collapse. As the housing market crashed in 2007, sawmills shut down and loggers abandoned the market. Lumber production in the U.S. halved from 2005 and 2009, and has only partially rebounded by 2015. Current year estimates are for production of 8.69 billion board feet in the lumber industry. In addition, during the housing downturn many logging firms went out of business or greatly reduced their workforce. Thus, while there is plenty of white oak available, logging firms have limited capacity to harvest it. Transportation costs are also prohibitive, so sawmills tend to be located near the oak plantations.

- Adapted from: Mickle, T. "Bourbon Feels the Burn of a Barrel Shortage." *Wall Street Journal*, May 11 2015.

1 Answer each of the following questions:

(a) What do you see as the fundamental problem in assuring the supply of white oak for the U.S. bourbon barrel market? (5 marks)

(b) As a distiller in the U.S. bourbon market (like Jim Beam), what characteristics of the supply chain described above would cause you concern? Why? (10 marks)

(c) As a large player in the barrel making industry – either an independent cooperage or in-house barrel production for major distillers – what actions would you consider in response to the current barrel shortage? (15 marks)

SECTION B

2 Managing volatility – for example, in customer demand, lead times, and supply chain disruptions – has become the 'new normal' for many organisations. Discuss how firms are evolving their products and supply chains in order to meet these challenges.
(35 marks)

3 Many buyers believe that holding a high level of power over suppliers is the key to an effective sourcing strategy. To what extent do you agree with this assertion?
(35 marks)

4 Social audits of supplier factories are a "failed tool" for making sustainable change in the lives of workers. To what extent do you agree with this statement?
(35 marks)

END OF PAPER