

Computer Science Department

Dummy Cover Sheet

M.Sc. / Coll Dip

3C16 Technology Management and Professional Issues, “Eample Paper”

based on:

D03 Computer Management, 2000-2001 and resit 1999-2000.

2 hours 30 minutes

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with additions by Soren Sorensen

Answer THREE questions, one from each of sections A, B and C.

All questions carry equal credit. The use of electronic calculators is permitted.

SECTION A

Question 1

You are the computer systems manager of a small company of 50-70 employees that produces bespoke software for integration of business planning, project control and accounting systems in a competitive market. The company is taken over by a large firm with a reputation for strict cost control who send in a team to assess the efficiency of the provision of computer resources.

(a) Explain your role as computer systems manager to the investigating team.

[8 marks]

(b) Explain why you run the company's networked computer system at a low level of average utilisation so that there is plenty of spare CPU capacity and disc space, and why all your product developers' machines have large memory.

[10 marks]

(c) Explain why, in spite of the low-levels of average utilisation, you regularly replace machines and upgrade software and do not indulge in much system performance tuning.

[9 marks]

(d) Explain why the company does not allow users to manage their own machines and software.

[6 marks]

[TURN OVER]

Question 2

An engineering research and development institute undertakes work across a wide range of applications, including for example:

- (i) fluid dynamics calculations for the simulation of air-flows around buildings and engineering structures;
- (ii) development of decision support systems and databases for land use, agriculture and horticulture;
- (iii) development of video systems for the guidance and control of robot vehicles.

The institute's management wish to ensure that projects are completed to time and to cost and are seeking to appoint a senior member of staff to oversee software development. You are one of the short-listed candidates.

- (a) Describe how you would classify the different types of work undertaken by the institute and explain why such a classification is useful.

[10 marks]

- (b) Describe the approaches you would expect to be used within the institute in estimating the size and duration of software development projects.

[8 marks]

- (c) Explain why it is important that the institute's research and development engineers adhere to appropriate standards and quality assurance procedures.

[8 marks]

- (d) Explain why you think it is important that the institute's engineers attend regular training courses, attend conferences and workshops and maintain a network of industrial and academic collaborators. Describe what other activities you think the engineers should undertake in order to help meet these objectives and indicate what other links you think they should maintain. Explain why these are also important.

[7 marks]

[CONTINUED]

SECTION B

Question 3

(a) Using the activity-on-arrow method draw the network of the following activities for development of a short management course:-

Activity	Description	Dependent Activity	Duration (weeks)
A	Design course overview	None	6
B	Arrange publicity	A	4
C	Design detailed syllabus	A	8
D	Appoint lecturers	A	10
E	Process student applications	B	8
F	Prepare teaching materials	C	10
G	Lecturer preparation	D, F	4
H	Send out student joining instructions	E	3
I	Present course	G, H	1

Use dummy activities as required.

[10 marks]

(b) Perform forward and backward passes to calculate earliest and latest event times for every node to achieve the minimum possible project time. Enter these on the project network. Identify the critical path and the minimum project duration.

[8 marks]

(c) Construct a table showing the total float and the free float for every activity.

[6 marks]

(d) Discuss how the planning process described above fits into the project life-cycle. Describe what other components of the life-cycle you would include for this project on the development and presentation of a short management course.

[9 marks]

[TURN OVER]

Question 4

A firm sets up a new fitness centre in a town not far from London and on a direct commuter railway line. The town is expanding as it lies close to a new airport. The owners install a new information system to help them manage the centre.

(a) Discuss what the business aims and objectives of such a centre might be.

[8 marks]

(b) What strategic information might the directors of the firm wish to monitor to assist in implementing their five-year development plan.

[8 marks]

(c) Discuss how the information systems might produce internal information on the running of the centre that would enable the manager to optimise benefits for the customers and profitability.

[8 marks]

(d) The manager is to be paid an annual bonus based on performance objectives reached by the centre. Discuss how these objectives might be specified and the performance measured.

[9 marks]

SECTION C

Question 5

(a) Consider a fair game of dice. The game is played with 3 dice and you will win if your throw at least two ones in a single throw. Explain how you can determine the number of throws needed to have at least a 50% chance of winning?

[10 marks]

(b) In a game of craps (played with 2 dice), you have just thrown 7. A punter is betting whether you can obtain 7 in the next throw. What odds should he offer before you should be prepared to join, and why?

[5 marks]

(c) Discuss how people's attitude to risk from the perspective of Prospect Theory (Kahneman & Tversky). List the issues that may affect their behaviour and discuss the effect of each.

[18 marks]

[Total 33 marks]

[CONTINUED]

Question 5

(a) Discuss the concept of derivatives.

[7 marks]

(b) Explain how futures are used and the advantages they bring to sellers and buyers.

[9 marks]

(c) Explain how options are traded.

[9 marks]

(d) Ultratel shares are selling for 50 and Bisco shares for 120. Ultratel options at 62 are selling for £4.50 a share while Bisco options at 122 are available for £1.20. Explain the reasons that may lead to the difference in price.

[8 marks]

[Total 33 marks]

[END OF SAMPLE PAPER]