Computer Science Department

Dummy Cover Sheet

M.Sc. / Coll Dip

D03 Computer Management, 1995-96 and resit 1994-95.

2 hours 30 minutes

Answer THREE questions.

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

Question 1

(a) What factors influence the overall speed of a computer? Describe how you would characterise them so that you could compare the speeds of different computer systems.

[10 marks]

(b) Discuss how you would expect the speed requirements to differ for systems to be used:

(i) for handling many queries into a large database,

(ii) for carrying out large, scientific calculations, for example, in quantum chemistry,

(iii) for creating a computer generated virtual environment incorporating a 3D model of, for example, the interior of a planned office development,

and indicate what type of systems you would expect to see used for these activities.

[10 marks]

(c) In a typical network of computer workstations, many of the machines are idle much of the time. Explain why this is not necessarily a wasteful situation and discuss why there is still always demand for ever faster machines and why managers are prepared to invest in new, faster machines.

[13 marks]

Question 2

An engineering research and development company is considering whether to install a new computer system for its *technical* staff. Their requirements are for:

[Question 2 cont. over page]

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[Question 2 cont.]

(i) program development
(ii) scientific and engineering calculations and simulations,
(iii) generating graphical output for data visualisation, data analysis, reporting, and presentation,
(iv) preparation of reports and documentation, both at project milestones for customers and for regular, internal management meetings and reviews.

The time spent on different types of work by staff depends on their function, varying from research engineers who spend a high proportion of their time carrying out calculations and simulations, generating graphical output and preparing documentation, to a research manager who does no program development and spends much of his or her time preparing documentation and doing other work. The company has two research managers, eight project managers working for the two research managers, and forty research engineers.

The Managing Director has asked you to recommend what kind of computing facilities should be provided for his technical staff. Describe how you would go about the job. In particular:

(a) Describe what factors you would consider in determining the company's requirements.

[10 marks]

(b) Discuss how you would determine what is available and describe the factors that would be likely to influence your choice of system.

[11 marks]

(c) Describe how you would evaluate proposed solutions and discuss what factors you would regard as particularly important in recommending a course of action.

[12 marks]

[CONTINUED]

Question 3

"Effective Information Systems (IS) management is very much about the shift from controlling the technical process, of cost control, to the management of benefit realization."

Explain this statement and discuss how it might be applied to the installation of a new computer-based information system in a UK-based chain of 20 book-shops.

[33 marks]

Question 4

You have developed the prototype of a new device to manage energy consumption in a house. It is computer-based and optimizes the consumption of fuel and energy in a house.

(a) *Describe* the strategic information external to your company that you need before deciding whether to develop this product for the market.

[11 marks]

(b) If this product is to be manufactured by your company, machinery costing £1.2 million will be required. *Discuss* critically the main techniques of financial appraisal for such capital projects.

[10 marks]

(c) Explain the steps that you would take to minimize the risk of business failure in taking this product to the market.

[12 marks]

[End of paper]