



ICM

MARCH 2016

MANAGING COMPUTER SYSTEMS

Instructions to candidates:

- a) Time allowed: Three hours (plus an extra ten minutes' reading time at the start – do not write anything during this time)
- b) Answer any FIVE questions
- c) All questions carry equal marks. Marks for each question are shown in []
- d) Mark allocation should determine the length of your answer and the time you spend on it. Generally, one mark is awarded for each valid point
- e) Read all sections of any question before attempting any part of it
- f) Ensure that you pay particular attention to words underlined, in CAPITALS or in **bold**. FEW OR NO MARKS will be awarded to any question where these are ignored
- g) In questions requiring reference to particular institutions or applications, your answer must reflect this. Answers without these references will score few marks
- h) No computer equipment, books or notes may be used in this examination
1. a) Management can only sanction improved systems if they are aware that there are problems with the existing system and are able to identify ways of improving the situation. Discuss ways for management to be able to achieve both of these. [8]
- b) i Explain what is meant by the term **break-even analysis**.
ii Describe a business situation where break-even analysis would be appropriate.
iii Sketch a graph to illustrate this. Label all parts of the graph and explain their meaning. [12]
2. A real estate company sells, rents and maintains a variety of properties (houses, apartments, single rooms etc). A number of different tools are used in business to manage and process information. With specific reference to a **real estate company**, describe **FOUR** of those tools listed below:
- Relational database
 - Artificial intelligence
 - Expert systems
 - Internet
 - Data mining systems
 - Predictive modelling
- For EACH, provide a description of what it is, how it is used and how it would particularly benefit a **real estate company**. [5 each]
3. A sole trader currently uses one car to provide a taxi service. He wants to buy 3 more cars and hire contractors to drive them. He will need new equipment to allow the drivers to communicate with each other and also with the office, where calls are taken and bookings made for customers. The cars will need to be fitted with security cameras to protect the drivers and also specialist equipment for logging the fares. The fare data will be stored on the main office computer for auditing and accounts.
- a) Outline the points he should be discussing in a business plan with his bank manager in order to secure finance to expand his business. [10]
- b) Explain how a computer system might help him to administer the business. Identify software that would be useful and discuss HOW and WHEN it would be used. [10]
4. 'Fingers and Thumbs' is a small **private nursery school** that looks after children under the age of five while their parents are at work. There are five staff in total at the nursery school, the owner Pat and her assistant Maggie, who manage the timetables, accounts and records of the children who attend the nursery. There are three nursery teachers who take care of the children. Pat is considering introducing a computer system to help them manage the running of the business.
- With particular reference to a **private nursery school** employing up to five staff:
- a) Discuss the advantages that the use of computers can bring. [15]
- b) What problems might the nursery school encounter when implementing a computer system for the first time? [5]

continued overleaf

5. a) Explain what is meant by a **MATRIX organisational structure**. [4]
 b) Discuss the advantages and disadvantages of a MATRIX organisational structure. [10]
 c) Describe a type of business where a MATRIX organisational structure may be better than traditional organisational structures and explain why. [6]

6. a) Draw a network diagram for the following project. [10]
 A local supermarket plans to open a restaurant within the store. They need to carry out some research to determine whether existing customers and local residents would make use of the restaurant. Details of the tasks to be undertaken are outlined in the table below:

Task	Description	Sequence	Duration (weeks)
A	Initial research	Must be completed first	1
B	Develop questionnaire	Start when A is complete	3
C	Develop electronic survey	Start when A is complete	2
D	Distribute questionnaires and await responses	Start when B is complete	3
E	Email electronic surveys and await responses	Start when C is complete	3
F	Analyse results	Start when D and E are complete	4

- b) Include in your diagram the EST (earliest start time) and LFT (latest finish time) for each node on the diagram. [4]
 c) Calculate the total float for task C. [2]
 d) Identify the critical path. [2]
 e) Identify the shortest length of time it can take to complete the research. [2]
7. a) Explain the differences between information, knowledge and data. [3]
 b) List FOUR **distinctly different** items of **data** that might be collected in a school and state the purpose of EACH. [4]
 c) State FIVE factors that contribute to good quality information and for EACH:
 i explain why it is important
 ii give an example to illustrate this importance [10]
 d) With reference to **one** of the factors you describe in part c), give an example of a problem that might occur if the information was **not** good quality. [3]
8. A local college offers evening classes to adults. Some of the courses have an exam at the end of the course. People can enrol on a course by filling in an online form or, if they prefer, they can enrol over the telephone by giving the administrator the relevant information. Course fees are paid by credit card, debit card or PayPal. If enrolling online, payment details are also collected online, if enrolling over the phone the payment information must be given verbally to the administrator.
- a) Discuss in detail the potential computer crimes that could affect people enrolling on courses. [6]
 b) Describe ways that the college can protect its students and also ways that the students can safeguard themselves against these crimes. [8]
 c) When people enrol on a course they need to submit a certain amount of personal information.
 i Describe a **law** that the college has to comply with to ensure that this information is safe. [2]
 ii Explain TWO of the **rights** of the students under this law. [4]