



ICM

MARCH 2016

APPLICATIONS

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 ALL of SECTION A and any FOUR questions chosen from SECTION B
- c) SECTION A and each question in SECTION B carry 20 marks. Marks for sections of questions are shown in []
- d) The main application in each question of Section B is highlighted for quick recognition
- e) The number of marks allocated for each section should determine the length of your answer and the amount of time you spend on it. Generally ONE point gains ONE mark and is rarely achieved by one-word answers. Note carefully that where some questions require details of how hardware or software achieves its task, descriptions of user actions are unlikely to earn marks
- 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) No computer equipment, books or notes may be used in this examination

SECTION A – Answer ALL parts of this question

- 1. a) Explain why date of birth is held on data files in preference to age. [4]
- b) Draw a diagram to show how printed documents pass between a retailer and their wholesale supplier. [5]
- c) Distinguish between the following methods of processing: [5]
batch on-line real-time
- d) Describe realistic back-up systems that a large business would use for its computer data. [4]
- e) Distinguish clearly between data and information. [2]

SECTION B – Answer any FOUR questions from the following

- 2. A large company owns many **SUPERMARKETS** located in all the main towns of a small country. It has two supply depots for groceries, one in the north and one in the south. This means that any shop is within 150 kilometres of a depot. 100 staff are employed in each depot.
 - a) Explain how computers could be used to assist the general running of this business, with particular reference to supply, bearing in mind that food has a short shelf life. Your answer should identify particular software and hardware. Explain how both are used and state by whom. [12]
 - b) Identify statistical information that might be obtained using the computer system that would be helpful to management. [4]
 - c) Explain how this company might use a spreadsheet program in a 'what-if' context. [4]
- 3. A **LIBRARY** is provided by town authorities but is ONLY available to people who live in the town. The people must register and pay a small annual charge to borrow books and other items. A single library card, containing a bar code, is issued to each user once he or she has registered and paid the enrolment fee. All administrative processes are controlled by a computer system. Books can be borrowed for up to three weeks.
 - a) Detail the data that a potential borrower must give to register to use the library. Explain how the system can ensure that users of the library are eligible to join the library. [5]
 - b) Describe ALL the steps that the library staff members will take when a borrower approaches the counter with a library card and four books to borrow. [5]
 - c) Identify the computer files that will be held in the library. For EACH FILE, use the TABLE format below to list FOUR fields and explain how EACH will be used by the system. Ensure ALL fields are different. [10]

Field Name	How the system uses the data

continued overleaf

4. A **CLUB** has 200 members. It meets every week in a hall which it hires – the cost of hiring is met from membership fees. It occasionally arranges visits to out-of-town places and hires coaches to transport the members who reserve a place in advance and buy a ticket for these events. Members are expected to attend at least half of the 50 meetings throughout the year and may be asked to leave if they do not.
- Annual fees are determined by estimating the cost of hiring the hall plus administration costs and then dividing this by the current number of members. The figure is increased by 20% and rounded up to the nearest dollar. Assuming a database of members is held, explain how this calculation may be obtained. [4]
 - All members are sent a personalised letter one month before the end of the year detailing the fees for the coming year. Members have an option NOT to rejoin or pay by the start date of the new year. The letter has a tear-off slip for this purpose.
 - Design this tear-off slip. [8]
 - Explain how the letters can be produced automatically. [8]
 - Every half year, the committee asks the IT officer to supply them with a report tabling the names and attendance details of members who have below 60% attendance. Explain how this is achieved. [4]
 - Name at least EIGHT fields that would be necessary in any record on the member file to achieve ALL of the above. [4]
5. A customer visits his local branch of a large national **BANK**.
- He decides to withdraw money at the ATM outside the bank.
 - Describe the card that enables him to withdraw the money, particularly with relation to data that will be needed.
 - Explain the steps in their correct order that the customer then takes to complete the process.
 - Explain the steps that occur INSIDE the system, with particular reference to the signals that pass between the ATM and the bank's computer. [12]
 - Discuss THREE reasons why the ATM may NOT supply the money. [3]
 - Explain how the system minimises fraud. [2]
 - State THREE other reasons why the customer might use an ATM. [3]
6. A **UTILITY** company supplies electricity to half the homes and businesses in a country. The number of customers exceeds one million. Discuss how the company would use computers for handling account billing and customer enquiries. Your answer should include a discussion of:
- the hardware needed
 - the main processing applications
 - data capture – consider all aspects and the methods of capturing the data – identify what is included in each set of data
 - the printed outputs – explain how they are used [20]
7. a) A large retail company buys its products in bulk and sells to customers individually. It has a warehouse in which 20,000 items could be stored at any time. Explain why **STOCK CONTROL** is a necessary requirement of THIS company. [4]
- b) Data for the system normally comes from paper documents. The system itself also produces printed output documents. Identify all the documents referred to here. Discuss their purposes and their sources and users. You should consider at least FIVE documents. [10]
- c) Draw up a table with the following headings:
- | Item | Data Type | Why present and how it will be used |
|------|-----------|-------------------------------------|
|------|-----------|-------------------------------------|
- Fill in the table for SIX different items which would be found in the PRODUCT file. [6]
8. a) In business, a computer user may use two types of application software – general purpose and special purpose.
 - Distinguish between the two.
 - An employee uses a special-purpose package. Explain how his subsequent actions will be different from using a general-purpose package. [5]
- b) A user wishes to sort a very large data file of employee records (key field = employee number) so that the file is sorted by employee name – surname must be the prime key and first name the secondary key. State the information the sort program will need to achieve this. [5]
- c) Name a particular operating system. Describe FIVE major features the operating system provides. Your choices must be significantly different from each other. [10]