



SEPTEMBER 2017

COMPUTER APPRECIATION & 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 sections of Question 1 and any THREE questions chosen from Questions 2 to 6
- c) Question 1 carries 40 marks and each other question carries 20 marks. Marks for sections of questions are shown in []
- d) 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
- e) 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
- f) No computer equipment, books or notes may be used in this examination

1.
 - a) List FOUR tasks that a network supervisor might perform in a typical week. [4]
 - b) List FOUR disadvantages of introducing computers into a company. [4]
 - c) Draw a diagram showing how the following are linked:
storage devices, input devices, CPU, output devices
Mark arrows on your lines to show only direction of data flow in each case. Do NOT include control signals. [4]
 - d) Spreadsheets use ABSOLUTE and RELATIVE addresses. Distinguish clearly between them. Explain how an absolute address can be incorporated into a formula and then copied to other cells. [4]
 - e) Distinguish CLEARLY between RAM and ROM. For EACH, state a typical use. [4]
 - f) Distinguish CLEARLY between LAN and WAN. [4]
 - g) List FOUR sub-systems available within an integrated accounts package. [4]
 - h) Write ONE descriptive sentence for EACH of the following to show that you understand how each operates:
 - i Modem
 - ii Multiplexer
 - iii Packet switching
 - iv ISP [4]
 - i) Explain what is meant by **data validation** and state TWO types of validation that could be applied to a 5-digit employee number. [4]
 - j) Insert the correct word/phrase into EACH of the gaps labelled P, Q, R, S in the following text:
"A P, which is organised sequentially, consists of a collection of Q, which are held in R order. Finding a particular data item on it is S than if it was organised serially." [4]
2.
 - a) For a spreadsheet program:
 - i Draw a labelled diagram showing the layout of the full screen of a spreadsheet program before any data is entered. [5]
 - ii The cursor highlights a particular cell. List FOUR significantly different types of KEYBOARD entry that can be made for this cell. [4]
 - b) An engineering company makes metal parts for other companies to incorporate into their products. The company uses a database program to hold details of all its stock, its outstanding orders and the scheduling of all its machinery in the production process.
 - i Explain fully how the structure of a new database is first defined. [5]
 - ii Using the table below in which an example has been included, list SIX more fields for the above database. [6]

Field name	Data type	Reason for this field
PartNumber	Integer	Unique product identifier

continued overleaf

3.
 - a) Within a retail company, a programmer has been given the task of writing a program which will analyse existing records to predict sales trends. The systems analyst gives to the programmer a complete specification of the required program. Describe the subsequent stages of developing this program in their CORRECT order. Be sure to consider the scale of this problem in a commercial environment. [8]
 - b) State the names of FOUR significantly different high-level languages. For each language, suggest a typical application area that is likely to be written in that language. [8]
 - c) Distinguish between HIGH-LEVEL and LOW-LEVEL programming languages. [4]

4.
 - a)
 - i Describe the physical processes that occur when a scanner is used to take a copy of a picture and save it on a disk file. Describe only processes WITHIN the machine. [6]
 - ii Explain how this picture can then be manipulated by the user for his or her own use. [4]
 - b) Many libraries now issue members with a single barcoded ticket. Explain:
 - i the steps taken by the librarian AND the computer when a book is borrowed and the details of the loan are recorded on a file
 - ii how the system ensures that the member cannot borrow more books than the permitted maximum [6]
 - c) Explain WHY barcode readers are now more common, particularly as used in a supermarket. [4]

5.
 - a) Briefly list and describe the main stages of the systems life cycle IN THEIR NATURAL ORDER. [6]
 - b) Identify the people that the systems analyst will normally meet during his or her normal work. In EACH case, discuss the reasons why he or she would meet that person. [6]
 - c) File design is one of the tasks that the systems analyst undertakes. Explain how he or she decides whether a particular file should be organised as **serial**, **sequential** or **indexed sequential**. [4]
 - d) Explain how the analyst decides which programming language should be used to develop a new system. [4]

6.
 - a) Name a particular magnetic storage medium and describe how data is stored on it. [6]
 - b) A SEQUENTIAL file holds details of all employees in a company. List all the steps that a SPECIALLY WRITTEN program (not a database) would need to take to print details of employees who are over 60 years old. [5]
 - c) Explain, alternatively, how the file would need to be organised if quick access to a particular SINGLE record was needed. List the stages that a program would need to go through to perform this task. [5]
 - d) List all the essential fields that would need to be on an employee's record which would enable the company to contact those employees who have not had a pay rise in the last three years. [4]