*Answer **all** the questions in this section in the spaces provided.*

1   (a)   Describe an input device.   (1 mark)

    (b)   Other than scanning devices, name **two** other input devices.   (1 mark)

2.   Distinguish between the following:

    (a)   CRT and LCD   (2 marks)

    (b)   OCR and OMR.   (2 marks)

3.   (a)   What is meant by freeware?   (1 mark)

     (b)   State **two** ways of acquiring freeware.   (1 mark)

4.   Describe the term 'home page' as applied in the internet.   (2 marks)

5.   (a)   Define the term Computer Aided Design.   (1 mark)

     (b)   List **three** advantages of using Computer Aided Design.   (3 marks)

6.   List **three** ways in which computer technology can be used in law enforcement.   (3 marks)

7.   A computer system is able to work on both spreadsheet and wordprocessing documents.
     Explain how a computer can operate two packages at the same time.   (2 marks)

8.   Describe each of the following types of computers: (2 marks)

     (a)   hybrid;

     (b)   embedded.

9.   State **two** purposes of the maintenance phase of the system development life cycle.
                                                                          (2 marks)

10.   (a)   List **four** stages in data collection.   (2 marks)

      (b)   What is meant by the following: (2 marks)

            (i)   transaction file;
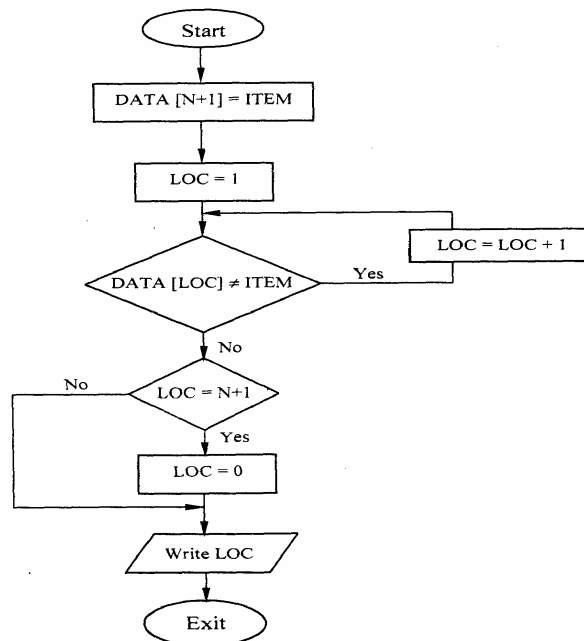
(ii)   master file?

11.   Headache, back and neck pain may result from use of computers. State how each of them can be minimised.   (2 marks)

12.   State **two** ways in which each of the following can be prevented: (4 marks)

(a)   software errors;

(b)   computer fraud.

13.   In relation to DTP, state the:

(a)   purpose of frames;   (1 mark)

(b)   difference between an inside margin and an outside margin.   (2 marks)

14.   Distinguish between formatting a disk and scanning a disk with reference to operating systems.   (2 marks)

15.   State **two** advantages of using robots in manufacturing of goods.   (2 marks)

SECTION B (60 marks)

*Answer question 16 and any other **three** questions from this section in the spaces provided.*

16.   Study the flow chart below and answer the questions that follow.

If DATA is the following sorted list of 13 elements, such that N = 13: (where N is the number of elements in the list),11, 22, 30, 33, 40, 44, 55, 60, 66, 77, 80, 88, 99.

(a)   Determine the output from the flowchart if ITEM is:

     (i)   40   (2 marks)

     (ii)   99   (2 marks)

     (iii)   120   (2 marks)

     (iv)   5   (2 mark)

(b)   Explain the purpose of this flowchart.   (2 marks)

(c)   Write a pseudocode for the above flowchart.   (5 marks)

17.   (a)   Describe **two** ways in which a computer can represent a positive number and a negative number.   (2 marks)

    (b)   A particular computer stores numbers in a single 8-bit word. How would it represent 0.3125_{10}?   (3 marks)

    (c)   What is the decimal equivalent of the number 1.0111_2?   (2 marks)

    (d)   Perform the decimal subtraction $14_{10} - 6_{10}$ using

        (i)   regular binary;   (3 marks)

        (ii)   one's complement.   (5 marks)

18.   (a)   List **three** advantages and **three** disadvantages of wired communication over wireless communication.   (6 marks)

    Advantages

    Disadvantages

    (b)   Describe the following signals and state where each is applied in network communication: (4 marks)
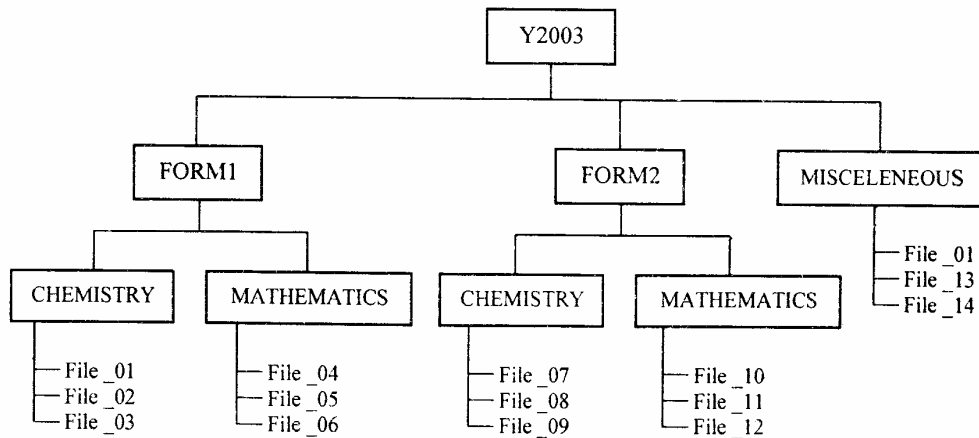
        (i)   analog;

        (ii)   digital.

(c) Name the **two** types of coaxial cables. (2 marks)

(d) (i) Define the term network protocol. (1 mark)

   (ii) List **four** internet protocols. (2 marks)

19. The information below is maintained by the patron of wildlife club in a school. Study it and answer the questions that follow.

Name	Class	Admission Number	Membership Number	Group
Mary	4 E	3740	S 001	Serengeti
Gupta	3W	3802	T 001	Tsavo
Carey	2N	3949	T 003	Tsavo
Gregory	4W	3762	M 001	Mara
Sanjay	3N	3800	A 001	Amboseli
Mariam	2E	3925	S 002	Serengeti
Josephine	2W	3926	N 001	Nairobi
Elvis	4N	3746	AB 001	Aberdare
Carey	3E	3805	T 002	Tsavo
Gordon	1W	4029	N 002	Nairobi
Paul	1N	4013	M 002	Mara

(a) Describe the field values, records and file. (3 marks)

(b) State the most appropriate primary key for the list. (1 mark)

(c) State the most appropriate data type for the fields:

   (i) admission number; (1 mark)

   (ii) membership number. (1 mark)

(d) If a database was to be created for the list; Forms, Tables, Queries and Reports are likely to be used.

   (i) State the purpose of each of these objects. (4 marks

   (ii) Which objects cannot be used to store the data in the list? (3 marks)

(e) (i) How many field values are in the list? (1 mark)

   (ii) How many records are in the list? (1 mark)

20. An operating system organises files in directories as shown in the chart below. Study it and answer the questions that follow.

```
                        ┌──────────┐
                        │  Y2003   │
                        └────┬─────┘
         ┌───────────────────┼───────────────────┐
    ┌────┴────┐         ┌────┴────┐        ┌──────┴──────┐
    │  FORM1  │         │  FORM2  │        │ MISCELENEOUS│
    └────┬────┘         └────┬────┘        └──────┬──────┘
                                                  ├─ File _01
    ┌──────┴──────┐     ┌──────┴──────┐           ├─ File _13
┌───┴────┐ ┌──────┴────┐┌───┴────┐┌──────┴─────┐  └─ File _14
│CHEMISTRY│ │MATHEMATICS││CHEMISTRY││MATHEMATICS│
└────────┘ └───────────┘└────────┘└───────────┘
 ├─ File _01  ├─ File _04  ├─ File _07  ├─ File _10
 ├─ File _02  ├─ File _05  ├─ File _08  ├─ File _11
 └─ File _03  └─ File _06  └─ File _09  └─ File _12
```

(a) (i) What is the name of this file structure? (1 mark)

(ii) One of the files in MISCELLANEOUS has a file name similar to one in CHEMISTRY in Form 1. Describe what happens if all the contents of CHEMISTRY are copied to MISCELLANEOUS. (2 marks)

(iii) What will happen if an attempt is made to delete FORM2 while File_10 in MATHEMATICS is open? (1 mark)

(iv) State **four** advantages of this structure. (2 marks)

(b) State **four** properties that an operating system displays about a file. (2 marks)

(c) A removable storage media unit connected to a single user microcomputer system is used for permanent storage of programs and data. State **six** file functions you would expect the operating system of the computer to provide to enable the user to maintain this storage media. (3 marks)

(d) State **two** tasks performed by the operating system in each of the following resources:

(i) memory; (2 marks)

(ii) input/output devices. (2 marks)