CAMBRIDGE
INTERNATIONAL EXAMINATIONS

CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Subsidiary Level and Advanced Level

COMPUTING   **9691/1**
PAPER 1

SPECIMEN PAPER   2 hours

Additional materials:
    Answer paper

TIME   2 hours

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided on the answer paper/answer booklet.

Answer **all** questions

Write your answers on the separate answer paper provided.

If you use more than one sheet of paper, fasten the sheets together.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

You are reminded of the need for good English and clear presentation in your answers.

This question paper consists of 5 printed pages and 3 blank pages

[Turn over

1 A friend, who wishes to buy a computer for home use, knows little about computer hardware and has asked for some help. Write a **brief** report outlining the main differences between a floppy disk drive, a hard drive and a CD-ROM drive. You should state a typical use for each type of drive. [6]

2 (a) State what is meant by *simplex, duplex, half duplex* in the context of data transmission, giving an example of the use of each. [3]

(b) Explain the meaning of the term *protocol* and explain why protocols are necessary for data transmission. [2]

3 Consider the following 8 bit binary integer.

01111010

(a) State the decimal equivalent of this binary integer. [1]

(b) Explain the relationship between a character set and a byte. [2]

4 A software developer retains the source code for a particular application and provides the application's user with the object code.

(a) Explain the difference between *source code* and *object code*. [1]

(b) State two reasons why the application's user is supplied only with the object code. [2]

5 With the aid of a suitable example, describe one type of error which will be detected during

(a) program compilation [2]

(b) program execution [2]

6 (a) State a characteristic of a real time computer system. [1]

(b) Describe how buffers and interrupts can be used to allow other jobs to be carried out when a job is sent from a computer to a printer. [5]

7 A sales department in a large corporation makes a large number of amendments to its data files each day. Backups are carried out daily while archiving is carried out on a yearly basis.
State the purpose of these two procedures, and outline the main steps involved in each.   [6]

8 A teacher wishes to keep a record of the marks obtained by pupils throughout the year. At the end of the year each pupil is supplied with a report that contains personal details of the pupil, the percentage mark obtained by the pupil, and a comment written by the teacher.

   (a) Explain the role of

   (i) a word processor

   (ii) a spreadsheet

   (iii) a database

   in the production of the reports.   [3]

   (b) The teacher's file is organised as a sequential file.

   (i) Identify the field most suitable for use as the key field. Justify your choice. [1]

   (ii) Explain what is meant by a sequential file.   [2]

   (iii) Briefly describe how the file can be organised as a random access file using a hashing algorithm.   [3]

9 **(a)** Give one example of an application for which it would be sensible to use a batch processing operating system.   [1]

   (b) State **two** characteristics of your chosen application which make a batch processing system a sensible choice.   [2]

10 The leader of a pre school play group would like to buy a computer. The computer will be used to teach young children to count and also to assist the leader with administration tasks.
The interface between the user and the computer is likely to be very different for the two types of user. Describe a suitable type of screen interface, and state a sensible method of input for each user, giving reasons for your answers.   [6]

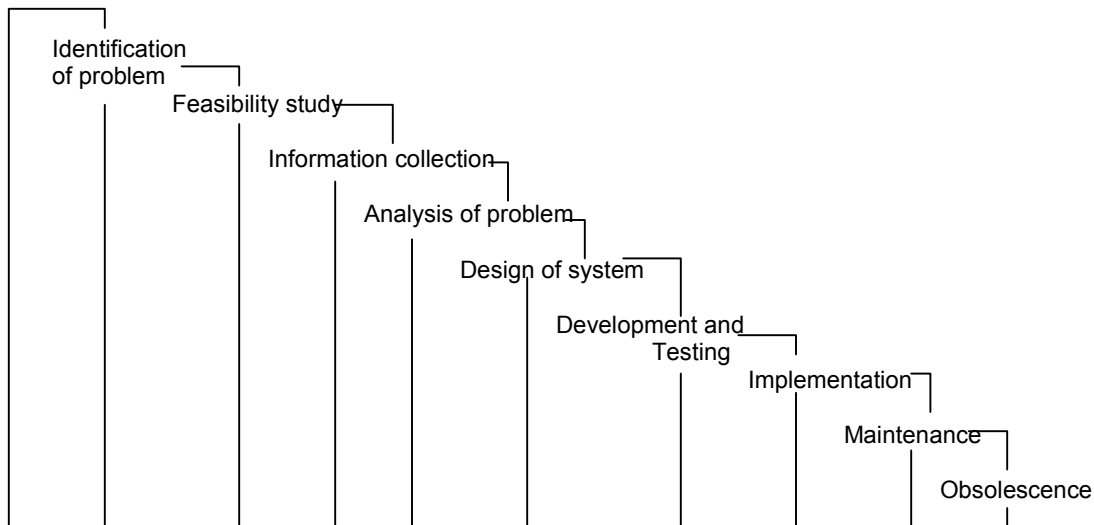**The remaining questions refer to the following information.**

Tifpeek Ltd operates sports and leisure clubs in a number of towns and cities throughout the country. Each provides a wide range of fitness and health facilities for its members. Membership is renewed annually. Each club also provides its members with a wide range of catering and shopping facilities.

11 Tifpeek decide to computerise the company accounts. A number of accounts packages are available. The management of the company need to decide between using an off the shelf package or commissioning a custom written piece of software.

(a) Explain the difference between *off the shelf* and *custom written* software. [1]

(b) State three advantages of using off the shelf software in this example. [3]

12 Memberships are handled manually at each club, but the management are unhappy with many aspects of this system. They have engaged a computer consultant to examine one of their clubs and to develop a computerised membership system.
In a memo to the management of Tifpeek, the computer consultant frequently refers to the 'system life cycle' of the proposed membership system. Briefly describe **five** of the main stages of the system life cycle described in Fig. 12.1. [10]

Identification of problem

Feasibility study

Information collection

Analysis of problem

Design of system

Development and Testing

Implementation

Maintenance

Obsolescence

Fig. 12.1

13 Tifpeek store large amounts of data about their members. Such personal information is protected by data protection legislation. Describe **three** features that would be part of such data protection legislation which may allay the fears of any members who are worried about their data being misused. [6]

14 Members have always paid in cash for services or purchases. Tifpeek have recently issued identification cards in the form of swipe cards to all their members and have installed swipe card readers in each of their clubs.

    (a) Describe how a swipe card system collects and processes data relating to members' expenditure. [4]

    (b) The data collected for each transaction includes

- the membership number (a letter followed by four digits)

- the date of the transaction

- the amount of money spent.

    Describe a validation check for each of these three pieces of data. [6]

    (c) Each member is sent a monthly statement of account itemising their purchases. State what type of processing would be suitable for producing such statements.
[1]

    (d) Describe two reports that a Management Information System could produce from the data collected. [4]

15 A computer terminal in the exercise room allows users to input their personal details and also details about their fitness. These details are entered by responding to prompts on a touch screen. State **four** principles that should be followed by the programmer when designing the user interface. [4]

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