COMPUTING **9691/01**

Paper 1 **October/November 2008**

2 hours 30 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **4** printed pages.

[Turn over

1 (a) State the purpose of the following devices in a computer system.

    (i) An input device

    (ii) An output device

    (iii) A storage device [3]

A computer system is used to monitor and control the temperature of the water in a fish tank.

(b) State an example of each of the following types of device which would be necessary in the computer system and state what they would be used for.

    (i) An input device

    (ii) An output device

    (iii) A storage device [6]

(c) The data is collected at regular time intervals and the results from the past 24 hours are stored in an array.

    (i) State **three** parameters that it is necessary to set when defining an array. [3]

    (ii) Describe an algorithm to read a temperature into the array when it is collected. [2]

2 (a) When a programmer writes a program, it is necessary to ensure that the code is properly presented to allow technicians to maintain it.
Describe **three** methods that the programmer can use to make the code understandable. [6]

(b) (i) Describe the technique of white box testing. [2]

    (ii) Describe **two** other methods of identifying program errors. [4]

3 A computer controlled machine on a production line is designed to produce components for cars. When the firm decides to change the car model, the machine must be reprogrammed.

(a) State what is meant by

    (i) custom-written software,

    (ii) generic applications software. [2]

(b) State which of the types of software in **(a)** is appropriate as the software for the computer controlled machine and justify your answer. [3]

(c) State **three** things which would need to be considered for the implementation (installation) of the new software. [3]

4 **(a)** READ NUMBER
FOR COUNT = 1 TO NUMBER
    READ MARK
    IF MARK < 50 THEN OUTPUT COUNT, "FAIL"
    ELSE IF MARK > 80 THEN OUTPUT COUNT, "MERIT"
           ELSE OUTPUT COUNT, "PASS"
           END IF
    END IF
NEXT
END

The above algorithm is designed to read a number of examination marks and print out the result for each one.
Complete a table like the one below in order to dry run the algorithm with the data

4,   40,   90,   60,   50,   70

NUMBER	COUNTER	MARK	OUTPUT

[8]

(b) It is intended that only marks from 0 to 100 inclusive should be awarded in this examination. Describe how validation can be included in the original algorithm in order to ensure that only marks from 0 to 100 are included. [5]

5 Customers send orders to a mail order company by post. Some of the workers have to open the mail and input all the orders into the computer system.

(a) Explain why the data input to the system by these workers is stored on a hard drive before being processed. [3]

(b) Describe a sensible procedure to be followed to back up the data. [4]

(c) Explain why data would be archived in this example. [2]

The remaining questions refer to the following information.

The workers in an office use stand-alone machines.
A decision is made to network the machines.

6 **(a)** State **two** extra pieces of hardware and **one** piece of software which would be necessary to create the network. [3]

(b) A protocol will be required.
Explain what is meant by a protocol. [2]

(c) Discuss the advantages and disadvantages of networking the computers. [5]

7 One of the tasks carried out by the office workers is to use the computer to produce the payroll once a week.

Workers in the factory have their pay sent electronically to their bank account and are given a statement showing their pay for the week.

(a) Explain why the payroll is produced using a batch operating system. [4]

(b) Explain why many of the workers are unhappy with this payment method. [4]

8 The workers in the office use three different types of storage medium.
For each of the three types, state a use to which the medium could be put and justify your answer.

    (i) Hard Disk

  (ii) DVD-RW

 (iii) CD-ROM [6]

9 (a) Give **one** example of a passive information system which the workers in the office might use and state why it is passive. [2]

(b) Give **one** example of an interactive information system which the workers in the office might use and state why it needs to be interactive. [2]

10 The office system offers workers different types of user interface depending on the task being carried out.

State a sensible user interface in each of the following situations, justifying your choice.

    (i) Inputting details of the times worked by each worker, each day, to the payroll system. [2]

  (ii) To allow the network manager to carry out maintenance on the system. [2]

 (iii) To allow workers to query the database in an unstructured way. [2]