

CAMBRIDGE

INTERNATIONAL EXAMINATIONS

DIPLOMA IN COMPUTING
PAPER 1

5216

OCTOBER/NOVEMBER SESSION 2002

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.



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This question paper consists of 4 printed pages.

Answer **all** questions

1 (a) Explain what is meant by the terms

(i) *off-the-shelf*,

(ii) *custom-written*

software.

[2]

(b) Give **three** advantages of using off-the-shelf software rather than custom-written software, and **one** disadvantage. [4]

2 Batch processing and real-time are two modes of computer system use.

(a) Define the terms

(i) *batch processing*,

(ii) *real-time processing*.

[2]

(b) Give an example of an application for which

(i) batch processing

(ii) real-time processing.

would be appropriate, giving a reason for each of your answers.

[4]

3 The algorithms shown have both been written with the intention of printing out the even numbers from 2 to 10 inclusive.

A X = 2
WHILE X <> 10 DO
 X = X + 2
 OUTPUT X
ENDWHILE
END

B X = 2
REPEAT
 X = X + 2
 OUTPUT X
UNTIL X > 10
END

(a) State the outputs from

(i) Algorithm A,

(ii) Algorithm B.

[2]

(b) Modify

(i) Algorithm A

(ii) Algorithm B

so that each will output the even numbers from 2 to 10 inclusive.

[2]

- 4 An examination centre holds data about the candidates at that centre.
The data held is
- 4 digit candidate number
 - candidate name
 - gender
 - date of birth
 - number of subjects entered.
- (a) If there are 200 candidates entered by the centre, calculate the expected size of the file.
Show your working and give your answer in suitable units. [6]
- (b) State a suitable medium for storing a back-up copy of the candidate file, giving a reason for your answer. [2]
- 5 (a) State the meaning of the terms
- (i) *source code*,
 - (ii) *object code*
- and state the process that connects them. [3]
- (b) Explain how this process can be used to check program code written by a programmer. [2]
- 6 An on-line telephone enquiry system employs a large number of operators who answer customer queries by accessing their records at a terminal. All the terminals are connected to a single processor using a multi-user operating system.
- (a) Explain how a multi-user operating system allows each of the users to share a single processor. [3]
- (b) Give reasons why a number of terminals using a multi-access operating system is preferable in this application to a number of stand alone machines. [3]
- 7 (a) Describe how an array is initialised in the memory of a computer. [4]
- (b) Describe how an array may be searched serially to find a specific data item. [4]
- 8 Explain the importance of bit rates to communication. Refer to the characteristics of two types of data file which may need to be transmitted around a network system. [6]
- 9 (a) Explain what is meant by the term *generic applications software*. [1]
- (b) State an example of an application where it would **not** be appropriate to use generic applications software, giving a reason for your answer. [2]
- 10 State **three** rules which would be part of a protocol used for sending data between two processors, explaining why each is necessary. [6]

- 11 State **two** types of diagram useful in the analysis stage of the system life cycle, explaining how each is used. [6]

The remaining questions refer to the following information.

A small building firm keeps records, on a computer system, of customers and jobs carried out. Customers sometimes contact the firm to ask for a quote for a standard piece of work, to ask for new work to be done, or to pay for work already carried out.

- 12 (a) With reference to this example distinguish between passive and interactive information systems. [4]
- (b) The information about customers held in the firm's computer files is confidential. State three measures that are often included in laws to protect individuals from suffering because of data held about them, giving a reason why each is important. [6]
- 13 A decision is taken to provide an information system for potential customers who come to the office. Customers would be able to choose the type of work to be done and would see examples on a screen.
Explain why a menu-based interface would be appropriate for this application if intended for customer use. [4]
- 14 The firm offers a service to potential customers whereby the firm's representative calls at the customer's house and produces an image of what the proposed building improvements will look like.
Explain how this service is carried out. Include a reference to the hardware required. [6]
- 15 When the computer system was produced, the systems analyst supplied user documentation and technical documentation.
- (a) State what is meant by
- (i) *user documentation*,
- (ii) *technical documentation*. [2]
- (b) State two items of documentation which would be included in
- (i) user documentation,
- (ii) technical documentation [4]

[Total: 90]