Paper Reference

7 1 0 5 / 0 1

Surname

Initial(s)

Signature

London Examinations GCE

Computing

Ordinary Level

Paper 1

Friday 9 May 2008 – Morning

Time: 2 hours 30 minutes

HA001648039

Materials required for examination	**Items included with question papers**
Nil	Case Study

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
Check that you have the correct question paper.
You must write your answer for each question in the space following the question.
Do not return the insert with the question paper.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. **(2)**.
There are 13 questions in this question paper.
The total mark for Section A is 50, and the total mark for Section B is 50. The total mark for this paper is 100.
There are 16 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

Turn over

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SECTION A

Answer ALL questions in this section.

1. Copying software could be a breach of software copyright.

   (a) Explain the purpose of software copyright.

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   (2)

   A company employs keyboard operators who use copyrighted word processing software on stand-alone desktop computers.

   (b) State the steps that the company should take to avoid breaching the copyright of the word processing program.

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   (3) **Q1**

   (Total 5 marks)

2. A college has a network computer used for management purposes. Only a few people are allowed access to the network.

(a) State **two** methods to prevent unauthorised access to the network.

1. ....

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2. ....

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(2)

People who are authorised to access the network might not be allowed access to all management data.

(b) Describe a method to restrict their access to the data.

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(2)   **Q2**

(Total 4 marks)

3. *E-shoppers.com* is a company that sells goods to the public using the Internet. Customers use an on-line catalogue to choose the items that they wish to buy. Customers who are using *E-shoppers.com* for the first time, have to register with the company. They register by completing an on-line form.

(a) Design an on-line form to capture the customer's name and address and details about how the customer will pay for the goods.

(6)

(b) *E-Shoppers.com* employed a software engineer to develop the system. Outline the responsibilities of the software engineer.

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(4)

(c) *E.Shoppers.com* network manager is concerned about computer crime.

(i) Give an example of computer crime that the manager might be concerned about.

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(1)

(ii) Explain how the manager could prevent this crime.

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(2)

Q3

(Total 13 marks)

4. A hospital has a local area network that links all the departments in the hospital.

(a) (i) State what is meant by the term *local area network (LAN)*.

....

....

(1)

(ii) State for what purpose the LAN might be used by a hospital doctor.

....

....

(1)

The hospital is linked to other hospitals in the region by a wide area network.

(b) (i) State what is meant by the term *wide area network (WAN)*.

....

....

(1)

(ii) State for what purpose the WAN might be used by a hospital doctor.

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(1)

The hospital also uses an intranet for some tasks.

(c) (i) State what is meant by the term *intranet*.

....

....

(1)

(ii) State for what purpose a hospital might use the intranet.

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(3) Q4

(Total 8 marks)

5. A computer system is developed in five separate stages. Two of the stages in the development are **analysis** and **implementation**.

(a) List **three** other stages.

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(3)

(b) Explain how an analyst would specify the problem at the analysis stage.

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(3)

During the **Implementation** stage the hardware will be installed and tested.

(c) State **three** further tasks to be completed in the implementation stage.

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(3) Q5

(Total 9 marks)

6. A football ground has 25000 numbered seats. During the season, supporters can buy
    tickets for matches at one of five ticket offices. The ticket offices are linked to a central
    computer that keeps a record of ticket sales. Each ticket office has a display that shows
    which seats have not yet been sold.

    Two supporters arrive at different ticket offices. At exactly the same time, they both try
    to book seat 300 for next Saturday's match.

    (a) Explain how the booking system prevents seat 300 being booked by both supporters.

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                                                                                              (3)

    Supporters of the club are given a plastic card. The plastic card carries information that
    can be scanned into a computer. Supporters who attend more than five matches in a
    season are given a discount when they book for additional matches.

    (b) (i) Explain how a supporter's information could be held on the card.

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                                                                                              (1)

    (ii) Explain how this information is used to give the discount.

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                                                                                              (2)   Q6

                                                                                 (Total 6 marks)

7. Computers that have additional specialised equipment attached are used to monitor patients in hospital. This process is a form of data logging.

(a) Give a specific example of this kind of data logging.

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   ....

   (1)

(b) State what additional specialised equipment is needed in this case.

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   (1)

(c) Draw a labelled diagram showing the main parts of the system.

   (3)   Q7

   (Total 5 marks)

   TOTAL FOR SECTION A: 50 MARKS

SECTION B

The questions in this Section refer to the case study.
A copy of the case study can be found as an insert.

Answer ALL the questions in this section.

8. Rakhee and Verna interviewed the Head of P.E. and did some other research.
    Three other research methods that could be used are:

    - questionnaires
    - inspection of documents
    - observation.

    (a) (i) State which of these research methods is the most suitable for this application.

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    (1)

    (ii) Explain why the other two methods are less suitable.

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    (2)

    (b) State **three** pieces of information which Rakhee and Verna need to obtain from this
    research.

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    (3) | **Q8**

    (Total 6 marks)

9. The following table shows incomplete details for fields in the database. Complete the table to show the data type and field length. Give a reason for each of your answers.

Field name	Data type	Field length	Reason
pupilID	numeric	7	4 digits identify the year, 3 more digits allow for 999 pupils per year.
event name			
class			
place			
record			

(Total 12 marks)

H 3 3 0 1 7 A 0 1 1 1 6

10. In Rakhee's database project a calculation must be done to produce points from the place field.
Rakhee added a new field called points to the database and used a formula to put values into it.

(a) State a formula which would serve this purpose.

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(3)

(b) At the end of the competition, the P.E. staff want to obtain a report for class 1B from the database. The report must show a list of all pupils in the class who scored points. The list must have pupils' names in alphabetical order. Explain how this can be achieved.

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(4)   Q10

(Total 7 marks)

11. In Verna's spreadsheet project each pupil has an X placed in the column of each event that the pupil has entered. The X is replaced by points if the pupil gains first, second or third place. The spreadsheet calculates each pupil's total points and calculates each class's total points.

(a) In the box, sketch a design of the spreadsheet. Include only five pupils and five events. Do not write out functions or formulae but show where they would be placed and state what they would do.

(6)

(b) Before the competition starts, the P.E. staff want the spreadsheet to show how many events each pupil has entered and to display a message if a pupil enters more than three.

State a suitable function for this purpose and explain how it would be used.

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(3)　　Q11

(Total 9 marks)

12. The database and spreadsheet described in the case study both offer different solutions to the problem.

(a) Describe **one** way in which the database gives a better solution than the spreadsheet.

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(2)

(b) Describe **one** way in which the spreadsheet gives a better solution than the database.

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(2)

Q12

(Total 4 marks)

13. Races are started by firing a starting pistol and the Head of Science has decided to use the sound of the pistol to start the timing system. She is going to use an infrared beam and laptop computer to detect runners as they cross the finish line.

(a) Describe, with the aid of a diagram, how this system would give a time for the winner of a race.

(8)

(b) Although the system gave a correct time for the winner, it would sometimes give fewer times than there were runners across the finish line. State a reason for this and suggest changes to solve the problem.

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(4)   **Q13**

(Total 12 marks)

TOTAL FOR SECTION B: 50 MARKS

TOTAL FOR PAPER: 100 MARKS

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Insert for use with Section B

Do not return the insert with the question paper.

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You have seen the following text which gives you details of a case study. It is included in the paper for reference. Read it again carefully and then answer ALL the questions in Section B. You should pay particular attention to the marks available for each question.

Bankside High School is a school for girls aged from 11 to 18. It has an entry of 100 pupils per year, organised into four classes of 25. The classes are named by using the year number and one of the letters B, A, N or K.
e.g. In the first year the four classes are 1B, 1A, 1N and 1K.

Every year the Physical Education (P.E.) staff organise a sports day where the classes in each year compete against each other at athletics. Each class must enter two pupils for each of 15 events. No-one may enter more than three events and everyone must enter at least one.

Three points are awarded to a pupil for winning, two points are awarded for coming second, and one point is awarded for coming third. At the end of the competition, the class whose pupils have gained the most points in their year wins a free outing, and the top three pupils in each year are given individual prizes.

Until now the P.E. staff have recorded all the entries and results on paper. This year they want to replace the manual system with a computer-based system and have asked the Computing department to develop one for them. The Head of Computing has asked two of her O Level pupils, Rakhee and Verna, to develop a system for their coursework projects. The two pupils arranged to meet with the Head of P.E. to discuss her requirements.

As a result of the meeting and some other research, Rakhee suggested making a database using three tables.

- PUPIL (<u>pupilID</u>, name, initial, class)

PupilID is taken from the Bankside School's main database and is a seven-digit number. The first four digits show the year of entry, the last three identify the student within that year, e.g. 2003025 shows that the pupil is in the group that joined the school in 2003 and that the pupil was the 25th entrant that year. Name is the pupil's surname and the initial is used if necessary to distinguish between pupils with the same name.

- EVENT (<u>event name</u>, staffID, record)

Event name includes a number to indicate which year group the event is for, e.g. 100 metres 1 is a 100 metre race for pupils in year 1, High Jump 8 is the high jump event for pupils in year 8. StaffID is taken from the school database and shows who will be supervising the event. Record is a 100-byte memo field which shows who holds the record for that event, what the record is, and when it was set.

- Result (<u>event name</u>, <u>studentID</u>, place)

Place is the pupil's finishing position and is used to calculate points and overall winners.

Verna suggested using a spreadsheet. Her idea was to have a multi-sheet workbook with one page for each year. There would be one row for each pupil and one column for each event. Each pupil would have an X placed in the column of each event that the pupil entered. The X is replaced by points if the pupil gained first, second or third place.

The spreadsheet would calculate individual and class points. It would also show the highest scoring classes and individuals in each year.

The P.E. staff also asked the Head of Science if she could adapt her data logging equipment to time the races. They explained that they wished to be able to time all the runners. Previously they had to use stopwatches and could only time the first and second places. Races are started by firing a starting pistol and the Head of Science has decided to use the sound of the pistol to start a timing system. She is going to use a laptop computer and infrared beam as they cross the finish line.

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