

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**

**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS TECHNOLOGY 2512**

Information Systems and Communications

Thursday

**9 JUNE 2005**

Afternoon

1 hour 30 minutes

No additional materials are required.  
Candidates answer on the question paper.

|                |   |                  |  |  |  |  |   |  |  |  |  |  |
|----------------|---|------------------|--|--|--|--|---|--|--|--|--|--|
| Candidate Name | Centre Number   | Candidate Number |  |  |  |  |   |  |  |  |  |  |
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**TIME** 1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- If you run out of space for an answer, continue on the lined pages at the back of this booklet.
- If you use these lined pages, you must write the question number next to your answer.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 90, of which 4 marks are allocated to the assessment of the quality of written communication.
- You will be awarded marks for the quality of written communication where an answer requires a piece of extended writing.
- No marks will be awarded for using brand names of software packages or hardware.

| <b>FOR EXAMINER'S USE</b> |  |           |
|---------------------------|--|-----------|
| <b>1</b>                  |  | <b>3</b>  |
| <b>2</b>                  |  | <b>5</b>  |
| <b>3</b>                  |  | <b>4</b>  |
| <b>4</b>                  |  | <b>4</b>  |
| <b>5</b>                  |  | <b>4</b>  |
| <b>6</b>                  |  | <b>9</b>  |
| <b>7</b>                  |  | <b>14</b> |
| <b>8</b>                  |  | <b>4</b>  |
| <b>9</b>                  |  | <b>14</b> |
| <b>10</b>                 |  | <b>6</b>  |
| <b>11</b>                 |  | <b>6</b>  |
| <b>12</b>                 |  | <b>2</b>  |
| <b>13</b>                 |  | <b>4</b>  |
| <b>14</b>                 |  | <b>7</b>  |
| <b>WC</b>                 |  | <b>4</b>  |
| <b>TOTAL</b>              |  | <b>90</b> |

**This question paper consists of 15 printed pages, 2 lined pages and 3 blank pages.**

Answer **all** the questions.

A theatre company produces two plays a month. A single computer is used to book seats for the different performances.

1 The computer runs very slowly.

Identify **two** hardware upgrades and **one** software upgrade that could improve the performance of the computer.

Hardware upgrade 1 .....  
.....  
.....

Hardware upgrade 2 .....  
.....  
.....

Software upgrade .....  
.....  
.....[3]

2 The theatre company needs to back up the 65 MB of data currently stored on the computer.

(a) Describe **two** different storage devices that would be appropriate to use to backup the data.

Device 1 .....  
.....  
.....  
.....

Device 2 .....  
.....  
.....  
.....[4]

(b) The theatre company manager transfers files between the theatre computer and his computer at home.

Identify a utility that could be used to decrease the size of files before they are transferred.

.....  
.....[1]

3 Two of the utilities in the computer system are translators and compilers.

Describe the function of each.

Translators .....  
.....  
.....  
.....  
.....

Compilers .....  
.....  
.....  
.....  
.....[4]

- 4 The booking system is built around the use of input, processing, storage, output and feedback.

Draw a diagram to show the input, processing, storage, output and feedback cycle.

[4]

- 5 The theatre company is investigating upgrading the booking system and is considering using standard applications software or using a programming language to write a new system.

Describe **two** differences between standard applications software and programming languages.

Difference 1 .....

.....

.....

.....

.....

Difference 2 .....

.....

.....

.....

.....[4]

6 The theatre company has decided to develop a new bookings database.

(a) Fill in the table below identifying an appropriate field name for each data type. The first one has been done for you.

| Data Type | Field Name |
|-----------|------------|
| String    | Surname    |
| Date      |            |
| Boolean   |            |
| Number    |            |

[3]

(b) Describe what is meant by validation.

.....  
.....  
.....  
.....[2]

(c) Give a suitable validation method for

(i) a telephone number

.....  
.....

(ii) date of birth.

.....  
.....[2]

(d) The data entered into the database needs to be verified.

Describe the purpose of verification.

.....

.....

.....

.....[2]

7 (a) Describe **two** advantages of using fixed length records for the new bookings database.

Advantage 1 .....

.....

.....

.....

Advantage 2 .....

.....

.....

.....[4]

(b) The theatre company has the option of using a relational or a flat file database.

Explain **three** reasons why the company should use a relational database instead of a flat file database.

.....

.....

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.....

.....

.....

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.....

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.....

.....

.....[6]



(c) The new bookings database has a WIMP interface. WIMP is a Graphical User Interface (GUI).

Describe **two** other types of interface.

Type 1 .....

.....

.....

.....

Type 2 .....

.....

.....

.....[4]

8 The theatre company uses a rule based system to help them select appropriate plays to perform.

(a) Describe what is meant by a rule based system.

.....

.....

.....

.....[2]

(b) Identify **two** reasons why the theatre company uses a system which relies on rules and probabilities instead of a system that creates standard reports.

Reason 1 .....

.....

Reason 2 .....

.....[2]

9 The theatre company is purchasing three additional computers and wants to set up a Local Area Network (LAN).

(a) Identify **two** characteristics of a LAN.

Characteristic 1 .....

.....

Characteristic 2 .....

.....[2]

(b) (i) Describe a star network topology indicating the direction of the flow of data. You may use a diagram.

Star:

.....  
.....  
.....  
.....  
.....  
.....

(ii) Identify **one** other suitable network topology that the theatre company could use.

.....  
.....[1]

(c) Describe **two** disadvantages to the theatre company of networking the computers.

Disadvantage 1 .....

.....  
.....  
.....

Disadvantage 2 .....

.....  
.....  
.....[4]

(d) The theatre company needs enough bandwidth to transmit live video of performances.

(i) Describe what is meant by bandwidth.

.....  
.....  
.....  
.....[2]

(ii) Explain why the theatre company needs a high bandwidth to transmit live video.

.....  
.....  
.....  
.....[2]



11 The theatre company has been told it must register under the Data Protection Act (1998).

Describe **three** of the legal rights that individuals have under the Data Protection Act (1998).

Legal right 1 .....

.....

.....

.....

Legal right 2 .....

.....

.....

.....

Legal right 3 .....

.....

.....

.....[6]

12 The theatre company is concerned about the security of the data on the computers.

Identify **two** measures the theatre company could introduce to prevent hacking.

Measure 1 .....

.....

Measure 2 .....

.....[2]

13 The theatre company has employed a Network Manager to look after the computers. The Network Manger wants to introduce a code of conduct for the staff.

Identify and explain **two** of the statements that the Network Manager could include in the code of conduct.

Statement 1 .....

.....

.....

.....

Statement 2 .....

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.....

.....[4]













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