INFORMATION AND COMMUNICATION TECHNOLOGY A
HIGHER TIER (2357H)
PAPER 1

1094

Specimen Paper 2002

Additional materials:
Candidates answer on the question paper.

TIME 1 hour 15 minutes

Candidate Name	Centre Number	Candidate Number

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 provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting 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 60 .
- You will be awarded marks for the quality of written communication where an answer requires a piece of extended writing.

1 A spreadsheet is used to process data about the number of cars using two car parks over a year.

	A	B	C	D
1	Month	Car park A	Car Park B	Most popular car park
2				
3	January	120	145	=if (B3>C3 , "A" , "B")
4	February	140	135	
5	March	174	201	
6	April	134	120	
7	May	167	130	
8	June	278	290	
9	July	290	315	
10	August	312	289	
11	September	216	290	
12	October	213	278	
13	November	126	178	
14	December	78	98	

(a) Cell D3 shows how the most popular car park for January is calculated. After typing the formula in D3, describe a quick way of putting similar formula into D4 to D14.

[2]

(b) Describe how a chart or graph is created to show the use of the car parks over a period of one year.

_____

_____

_____

_____

[2]

(c) **(i)** Give **one** different situation which can be modelled using a computer.

_____

[1]

(ii) Give **two** reasons why a computer model would be useful in this case.

Reason 1 _____

_____

Reason 2 _____

_____

[2]

2 **(a)** Give **one** situation where automatic data logging equipment could be used to record data over a long period of time.

_____

[1]

(b) Give **one** reason why automatic data logging equipment should be used to record data over a long period of time?

_____

_____

[1]

3   (a)   What is a computer virus?

[2]

(b)   Write down **two** ways in which you could prevent a computer virus affecting your machine.

Way 1

Way 2

[2]

4   A school is going to buy a number of laptop computers for pupils to borrow and use at home.

Give **two** problems that this may cause.

Problem 1

Problem 2

[2]

5   A small buggy connected to a computer is placed in a maze. The buggy will travel through the maze and learn the correct path. State **one** sensor which should be attached to the buggy and describe how it would detect an obstacle.

Sensor

Detection

[2]

6 A school secretary uses a computer all day. What **two** pieces of advice would you give to prevent the secretary having medical problems through the use of the computer? Give a reason for each piece of advice.

Advice _____

_____

Reason _____

_____

Advice _____

_____

Reason _____

_____

[4]

7 A school needs to convert a classroom into an Information Technology room containing 20 computers.

(a) What factors should be taken into account when choosing a suitable classroom?

_____

_____

_____

_____

[2]

(b) Cost will be one factor in choosing the type of computers to buy. What other factors should be considered?

_____

_____

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_____

[2]

(c) Give **one** way the introduction of the new computer system will affect the staff and pupils.

[1]

8 **(a)** Give **two** advantages of using an encyclopædia stored on CD-ROM rather than as a book.

Reason 1

Reason 2

[2]

(b) Give **two** reasons why it is preferable to use the book.

Reason 1

Reason 2

[2]

9 A school is introducing a computerised system for attendance registers. Describe the main stages gone through before the system is operational.

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                                                                    [4]

10 Describe some of the safety issues which must be considered when setting up a new computer room in a school.

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                                                                    [4]

11 Using an example explain how a computer aided learning system can help pupils learn.

Example _____

Explanation _____

_____

_____

_____

_____
                                                                    [4]

12 A water company uses a sensor to detect the acidity of the water in its reservoirs. Describe what happens to the data from the sensors.

‎

[3]

13 You are producing a school magazine using a desktop-publishing package. Compare alternative methods used to obtain pictures for inclusion in the magazine.

‎

[7]

14 Describe how the misuse of computers might give rise to legal and moral problems.

‎

[4]

15 Discuss the advantages and disadvantages of using information technology in shopping.

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[4]

TOTAL MARK   60

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

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MARK SCHEME

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Answers

Where there is only one answer given this is the only answer available.

Where a candidate has to choose a number of answers from a given list there should be no more answers than that asked for in the question. If a candidate gives more answers than asked for then every answer over the specified number cancels out one of the correct answers - if there are any.

No trade names are to given credit unless accompanied by a description of what they do eg 'MS Word' would gain no credit but 'the word processor MS Word' would.

1   **(a)**   Highlight cell D3 to D14   1
                   Replicate (fill, copy) D3 down to D14 1
                   Any suitable answer

          (b)   Highlight the areas containing the numbers of cars.
                   Select the type of chart.
                   Click on the button/select from a menu to create a graph.
                   Add title/legend/colour etc (1)
                   Position the graph on the screen.   2

          (c)   **(i)**   One from:
                           Flight simulation
                           Financial modelling
                           Bridge construction
                           Must be modelling - not recording
                           Any other suitable answer.   1

                   (ii) Two from:
                           To costly to build a physical model.
                           To time consuming to build a physical model.
                           Variables can be changed easily to see the effects of any change in input.
                           Dangerous
                           Any other suitable answer.   2

2   **(a)**   One from:
                   Weather station.
                   Automatic car park.
                   Monitoring a scientific experiment.
                   Monitoring traffic.
                   Temperature
                   Any suitable answer.   1

          (b)   A suitable reason for using the computer in the given application
                   such as:
                   not having to remember to take the readings.
                   automatic
                   more accurate readings.   1

3 **(a)** A piece of software/file which corrupts other software/computer   1
It can be passed from one computer to another computer   1

(b) Two from:
Use a virus scanner.
Software in the computer which checks every disk placed in the drive.
Running a virus checking program which checks every file on the disk.
Do not allow others to place discs in the disk drive.
Write protect floppy discs.
Any other suitable answer.   2

4 Two from:
Pupils may damage the computer (physical/software).
Pupils may lose the computer/stealing.
Pupils may introduce viruses.
Pupils could delete other pupils work.
Pupils could use them for games and not for work.
Pupils may not have a printer to print their work.
Sharing
Training students.
Deleting software.
No handwriting answers.
Any other suitable answer   2

5 One pair from
Switch   contact
Optical   reflection of light
Sound   reflection of sound
<u>Not</u> heat sensor   2

6 Two from:
Lighting
Ergonomic Keyboard
Radiation
Use the correct chair to avoid back problems.
Take regular breaks to avoid eye strain.
Position the keyboard with an arm rest to prevent injury to the wrist.
Any other suitable answer
1 mark for advice. 1 mark for reason.   4

7 **(a)** Two from:
Size of the room.
Location of the room.
How difficult is it to re-position the staff using the room.
Electricity supply to the room.
Layout of the room.
Can the room be secured?
Any other suitable answer. 2

(b) Two from:
Compatibility of the computers with the other computers in the school.
Is all the required software available for the computers.
How much re-training will be needed if the system is different to what
is already in the school?
What maintenance agreements are available on the different computer systems.
Robustness
On-going cost.
Maintenance agreement.
Any other suitable answer. 2

(c) One from:
Training of staff/pupils.
Re-organisation of the timetable.
Upheaval during installation.
Any other suitable answer. 1

8 **(a)** Two from:
Quicker to get the information you want
Search facilities.
Save pictures to other applications
Selectively save text to other applications
Video
Large sound files
Cost of updates
Any other suitable answer 2

(b) Two from:
No computer available
Can be read without needing a computer system
Religious beliefs
Not cost
Any other suitable answer 2

9 The answers should include a description of the following stages:
analysis of the problem
design of the solutions
implementation of the system
evaluation of the system
training
Marks up to a maximum of four. 4

10 Four from:
Positioning of desks/benches
Trailing cables
Electrical safety
Power extensions
Sufficient power points
Any other suitable answer   4

11 Four from:
Questions on screen
Pupils enter answers
Link to next question if correct or link to teaching if incorrect
Guidance through the path
Motivation
Description of a learning system is required. 4

12 Three from:
Data from the sensors is stored in the sensor.
Data from the sensor is transmitted to the computer.
Software can be used to collect data from the sensors.
Software could be used to graph the results.
A word processor can be used to document the results of the test.
Pictures from the data-logging software can be transferred to a word processor.
Publication.
ADC.
Any suitable statements.   3

13 Clipart
    Advantages
    Freely available
    Copyright free when printed
    Large source of pre-drawn material
    Saves time when creating the document
    Disadvantages
    Publication could look like many others
    Might not have the picture you want
Scanning
    Advantages
    Can copy any material
    Can be used to transfer text into a word processor
    Very fast picture acquisition
    Disadvantages
    Cost of a scanner
    Quality of image
    Computer memory constraints
User drawn
    Advantages
    Will be exactly what you want
    Disadvantages
    Time taken to draw the picture
    Need to be talented to produce a good drawing
Any other suitable answers.
Comparison should cover some of the above issues up to a maximum of 7 marks.   7

14   Description of four points from:
  Selling lists of names to other companies e.g. junk mail.
  Hacking to deliberately change data.
  Receiving data signals over the air.
  Tapping into network cables.
  Plagiarism.
  Illegal access to personal records.
  Storage of personal data.
  Fraud
  Changing/deleting dat
  Pornography
  Viruses can be spread
  Any other suitable answer.   4

15   Four points from:
  Information retrieval system.
  Credit cards.
  Debit cards.
  Security systems in shops.
  Automatic money machines.
  Running up large bills on credit cards.
  Point of Sale machines.
  Information systems.
  Automated vending machines.
  Unemployment.
  Automatic doors.
  Maximum of two marks on one topic.
  Any other suitable answer related to shopping.   4

                                                    TOTAL MARK   60

Assessment Grid

Question Number	AO1	AO2	AO3	AO4	AO5	Grade
1a	2.3 [2]					D
1b	2.3 [2]					D
1c	2.3 [1]			2.3 [2]		D
2a	2.4 [1]					D
2b		2.4 [1]				D
3a					1.6 [2]	D
3b					1.1 [2]	D
4				1.1 [2]		D
5	2.4 [2]					C
6					1.6 [4]	C
7a		1.6 [2]				C
7b		1.6 [2]				C
7c				1.6 [1]		C
8a			1.3 [2]			C
8b			1.3 [2]			C
9		2.5 [4]				B
10				1.6 [4]		B
11			2.5 [4]			B
12	2.4 [3]					B
13	2.2 [7]					A
14					1.6 [4]	A
15				1.6 [4]		A