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General Certificate of Education
 June 2006
 Advanced Subsidiary Examination



COMPUTING **CPT2**
Unit 2 Principles of Hardware, Software and Applications

Thursday 8 June 2006 1.30 pm to 3.00 pm

You will need no other materials.
 You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Show all your working.
- Do all rough work in this book. Cross through any work you do not want marked.

Information

- The maximum mark for this paper is 65.
- The marks for questions are shown in brackets.
- The use of brand names in your answers will **not** gain credit.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in all answers.

For Examiner's Use			
Number	Mark	Number	Mark
1		9	
2		10	
3		11	
4			
5			
6			
7			
8			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

Answer **all** questions in the spaces provided.

1 Mr Jones gives lectures using overhead transparencies (OHTs) and an OHT projector. He has decided to transfer all his transparencies onto his laptop and use them in Presentation Software to create a presentation for an LCD projector. Give **three** distinct benefits of this change.

1

2

3

(3 marks)

3

2 DVD-R and DVD-RW, floppy disk, hard disk, magnetic tape and flash memory are all examples of secondary storage media. For each of the following tasks, select from this list **one** suitable medium.

(a) Distributing software with a computer magazine.

.....
(1 mark)

(b) Storing application programs for everyday use on a PC.

.....
(1 mark)

(c) Transporting files between computers.

.....
(1 mark)

3

3 Using words from this list:

character, record, file, key, word, field

complete the sentences below.

(a) A is a single item of data. (1 mark)

(b) A is a row of data. (1 mark)

(c) A will contain a whole collection of data. (1 mark)

3

4 Computer software is protected by the Copyright, Designs and Patents Act 1988, amended by subsequent legislation.

(a) What is meant by copyright in the context of computer software?
.....
.....
(1 mark)

(b) Under the terms of the licensing agreement, what is a purchaser legally entitled to do with the purchased PC software?
.....
(1 mark)

(c) Give **two** ways a purchaser might wish to use the purchased PC software, which are forbidden under this legislation.
1
.....
2
.....
(2 marks)

4

5 Software which involves significant quantities of data entry will include validation checks.

A certain program uses a file with the following fields:

**(HouseID, PostCode, Surname, DateOfBirth,
Occupation, NumberOfAdults, NumberOfChildren)**

One example of a validation check that could be applied to data being entered into this file is a Type check which will restrict entries to a certain data type.

This could be applied to the field NumberOfAdults which would accept only integers.

Select **three** fields from this file, and for each, name and describe a different validation check (excluding Type check) that could be applied to it.

- 1. Field
- Validation check
- Description of check
- 2. Field
- Validation check
- Description of check
- 3. Field
- Validation check
- Description of check

(6 marks)

6

6 Different operating systems have been developed with different operational characteristics. One of the operational characteristics of a real time operating system is to produce output fast enough to affect the next input.

(a) Give **two** further operational characteristics of a real time operating system.

- 1
- 2

(2 marks)

(b) Some real time operating systems have to respond extremely quickly. Give **one** example of such a system and **one** example of a system where an extremely quick response is not essential.

Extremely quick: a system to

(1 mark)

Not extremely quick: a system to

(1 mark)

4

7 The new Head of Computing at a secondary school wishes to review the backup and restore strategies for the school’s computer system. The purpose of these strategies is to reduce to an acceptable level, the disruption caused by a system crash or by deliberate or accidental data loss caused by a computer user. The system covers the school’s administration and students’ work.

(a) For **each** of the following, suggest a suitable backup strategy. Your suggestions should all be different.

Hint: You might consider who should be responsible, how often it should take place and/or a suitable medium to use.

(i) AS level Computing students’ CPT3 coursework.

.....
.....
(2 marks)

(ii) Data from day-to-day school administration.

.....
.....
(2 marks)

(iii) Application software for any part of the system.

.....
.....
(2 marks)

(b) Give **two** more suggestions to the Head of Computing regarding this backup and restore strategy.

1
.....
2
.....
(2 marks)

8 (a) What could you do to ensure that your e-mails are not read by unauthorised people?

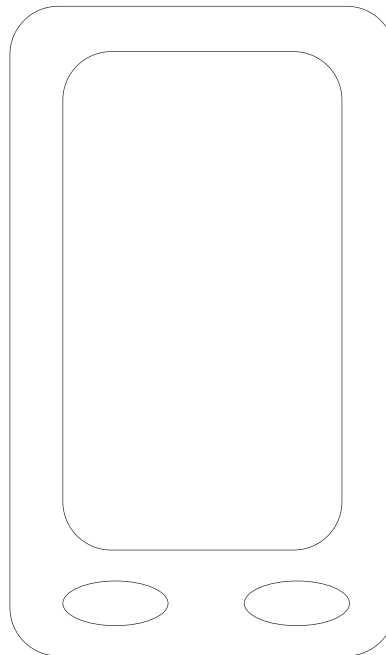
.....
(1 mark)

(b) You send an e-mail from your e-mail address at school to your cousin's e-mail address at work. Your cousin works for a large firm in your local town.

This e-mail may legally be read by other people apart from yourself and your cousin. Explain why this is so.

.....
.....
(2 marks)

9 The diagram shows a personal digital assistant or PDA (actual size) used in a certain restaurant by waiters and waitresses to take orders. A display screen covers most of the face and there is no keyboard.



(a) What input device should be used with this PDA?

.....
(2 marks)

3

(b) The restaurant offers a large selection of food for each course (Starters, Main Course, and Desserts) and a selection of drinks, both alcoholic and non-alcoholic. You have been asked to help in the design of the user interface on this PDA to enable the waiters and waitresses to identify a table and take orders. One requirement is the facility to select the table number on the first screen.

Give **three** more requirements.

1

2

3

(3 marks)

(c) How should the details of the order be transmitted from the PDA to the computer in the kitchen so that the staff know what dishes to prepare?

.....
.....
(1 mark)

6

10 (a) One of the roles of an operating system is **Resource Management**. Give **three** resource management tasks for an operating system for a stand-alone computer.

1

2

3

(3 marks)

(b) A second role of an operating system is the provision of a **virtual machine**. What does this mean?

.....
.....
(1 mark)

(c) Give **three** tasks that an operating system for a computer connected to a computer network will have in addition to the tasks of an operating system for a stand-alone computer.

1

2

3

(3 marks)

7

11 Sam starts work at a small business selling garden tools and equipment by mail order. Four of the employees in the business have their own stand-alone computers.

- Mary takes the order and enters it into her computer. She records the customer’s name and address, plus the item(s) ordered. She prints out a copy and gives it to Renie.
- Renie takes the items off the shelves and packs the order. She records, on her computer, the customer’s name and address, and the items despatched. She notes any item that is out of stock; these will have to follow in a later despatch. She prints off a copy of these details to give to Hassan.
- Hassan produces the invoice. He records, on his computer, the customer’s name and address and the items despatched with prices. He adds a handling charge and puts the invoice into an envelope ready for posting to the customer. He gives a copy invoice to James.
- James is the accountant. He records, on his computer, the customer’s name and address, the invoice amount and whether it has been paid or not.

(a) This system has disadvantages. Explain **two** of these.

1

.....

2

.....

(4 marks)

(b) Sam suggests that if the computers were networked, they could share files. If the computers were networked, why is it unlikely that they could share files as they are set up currently?

.....

.....

(2 marks)

(c) The company decide to start again and create a relational database. Sam starts talking about *attributes*, *primary keys* and *foreign keys*.

(i) Define an attribute.

.....

(1 mark)

(ii) Define a primary key.

.....

(1 mark)

(iii) Define a foreign key.

.....

(1 mark)

(d) Initially Sam thinks that four tables are needed

1. Customer table
2. Stock table containing details of each item of stock
3. Order table containing general details of each order
4. OrderLine table containing details of each item ordered for a particular order

Table:	Customer	Stock	Order	OrderLine
To include these fields	Surname	PartNumber	OrderNumber	OrderNumber
	Firstname	Description	DateOfOrder	OrderLineNumber
	Address1	UnitPrice	CustomerID	PartNumber
	Town	NumberInStock		Quantity
	PostCode			
	Telephone Number			
	CustomerID			

(i) What would be the most suitable primary key for the table Customer?

.....
(1 mark)

(ii) What would be the most suitable primary key for the table OrderLine?

.....
(1 mark)

(iii) Name a foreign key in the table OrderLine.

.....
(1 mark)

(iv) Mr Jeremiah Smith telephoned Mary. He said that he had mislaid his copy of his latest order and asked her to remind him what he had ordered. Mary asked him if he could remember the date he made the order, and he told her it had been 23rd April 2006. If Mary were using a relational database, set up to include the tables as described above, she could run a query to list the items. Complete the QBE grid required to produce this list.

Field	Surname	FirstName	DateOfOrder		
Table					
Show					
Criteria					

(6 marks)

END OF QUESTIONS

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