OCR
RECOGNISING ACHIEVEMENT

ADVANCED GCE UNIT **2511**

COMPUTING

Integrated Information Systems

FRIDAY 15 JUNE 2007 Afternoon

Time: 1 hour 30 minutes

Candidate Name

Centre Number | | | | | |

Candidate Number | | | | |

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- 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 spare pages at the back of the booklet.
- If you use these spare pages, you must write the question number next to your answer. You can also use the spare pages for rough work.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

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 (86 + 4 written communication.
- You will be awarded marks for the quality of written communication where an answer requires a piece of extend writing.
- No marks will be awarded for using brand names of software packages or hardware..

For Examiner's Use		
Question no.	Max. Mark	Mark
1	18	
2	23	
3	18	
4	10	
5	11	
6	6	
WC	4	
Total	90	

This document consists of **12** printed pages, **3** lined pages and **1** blank page.

[Turn over

Last year Roger Giles opened a garden centre at his farm using existing glasshouses to grow plants. He also turned a barn into a shop.

The shop sells plants and trees bought from suppliers as well as plants grown in his glasshouses.

Roger has used computers in his farming business and wants to use them in his new venture. His daughter, Emma, has just gained a Computer Science Degree and is keen to work with her father.

1 Emma's first task is to do a feasibility study of the use of computers in the business.

(a) State **three** functions of a feasibility study.

Function 1 .....

.....

Function 2 .....

.....

Function 3 .....

.....[3]

Emma has decided that it is feasible to use computers in the new business. At present there are only two employees who share the work in the shop and glasshouses with Roger.

(b) (i) Emma intends to use project management to plan the stages in the development of the computer system.

Explain what Emma will have to do in project management.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(ii) Name and describe **one** piece of project management software that Emma can use to help her to plan the development of the system.

Name .....

Description .....

.....

.....

.....

.....

.....

.....[4]

(iii) Give **two** benefits and **one** drawback of using project management software.

Benefit 1 .....

.....

Benefit 2 .....

.....

Drawback .....

.....[3]

(c) State **two** methods of collecting information for the systems analysis stage of the development of a computer system for this business. Give a reason for each of your choices.

Method 1 .....

.....

Reason .....

.....

Method 2 .....

.....

Reason .....

.....[4]

After completing the systems analysis stage, Emma has decided to have two computers in the shop and one in an office. These computers will be linked.

2 **(a)** Explain what Emma must do when designing this system.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(b) For each of the following, state **two** technical requirements of this system.

Hardware .....

.....

.....

.....[2]

Operating system .....

.....

.....

.....[2]

Utility software .....

.....

.....

.....[2]

Application software .....

.....

.....

.....[2]

Communication .....

.....

.....

.....[2]

(c) Give **three** steps that Emma must do when developing the software for her system.

Step 1 .....

.....

Step 2 .....

.....

Step 3 .....

.....[3]

(d) Describe a method of installation that is appropriate in this situation. Give a reason for your choice.

Method .....

Description .....

.....

Reason .....

.....[3]

(e) Explain why Emma will need to maintain the system after installation.

.....

.....

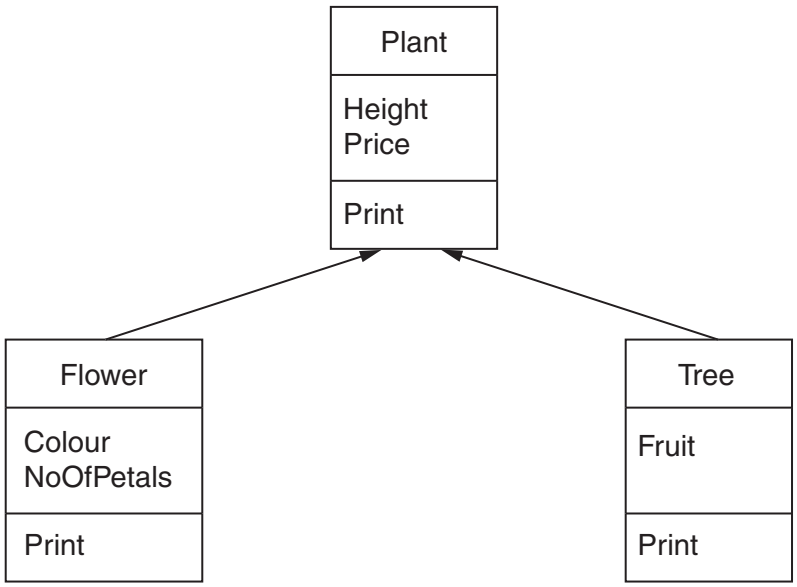
.....

.....

.....

.....[3]

3 Emma has decided that the system should have a section that allows a user to obtain details of plants and trees. She wishes to develop this using Object Oriented Programming (OOP) and has developed the class diagram shown below.



(a) Give **one** advantage of OOP over other methods.

.....

.....[1]

(b) OOP uses encapsulation, classes, derived classes and inheritance.

Using examples from the diagram, explain the terms

(i) encapsulation .....

.....

.....

Example .....[2]

(ii) class .....

.....

.....

Example .....[2]

(iii) derived class .....

.....

.....

Example .....[2]

(iv) inheritance .....

.....

.....

Example .....[2]

(c) Emma wishes to put a computer in the shop, for customers to use, to find information about plants. Some customers may wish to find information about a particular plant and others may wish to input details of a plant and find out what it is.

(i) Specify an appropriate hardware interface for this system.

.....

.....[1]

(ii) Describe what Emma should consider when designing the interface.

.....

.....

.....

.....[2]

(iii) Explain why good design is very important in this case.

.....

.....

.....

.....[2]

As well as details of plants, the system holds details of customers.

(d) Explain the commercial value of this data.

.....

.....

.....

.....

.....

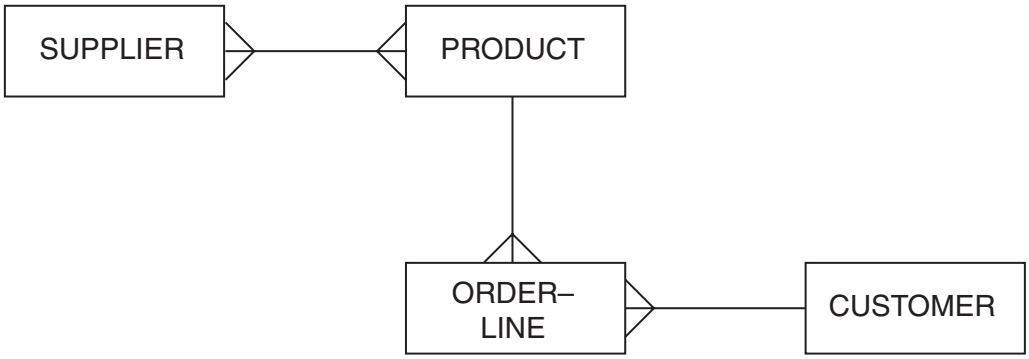
.....

.....

.....[4]

4 Some items, such as garden tools, trees and fertilizers, are bought in from suppliers. Details of suppliers and customers are held in a database.

(a) Describe the relationships shown in the following entity-relationship (E-R) diagram.



SUPPLIER – PRODUCT .....

.....

PRODUCT – ORDER_LINE .....

.....

ORDER_LINE – CUSTOMER .....

.....[3]

(b) Describe why the SUPPLIER – PRODUCT relationship is **not** satisfactory.

.....

.....[1]

(c) Draw an improved E-R diagram.

[2]

(d) State which **two** entities need foreign keys and give a reason for each.

Entity 1 .....

Reason .....

.....

Entity 2 .....

Reason .....

.....[4]

5 Emma wishes to create a website.

(a) Describe **two** facilities that should be available to users of the website.

1 .....

.....

.....

.....

2 .....

.....

.....

.....[4]

(b) Emma intends to use HTML to create the website.

(i) Explain the purpose of hypertext linking.

.....

.....[1]

(ii) Explain how hypertext linking can be achieved using hotwords, buttons and HTML.

Hotwords .....

.....

.....

.....

Buttons .....

.....

.....

.....

HTML .....

.....

.....

.....[6]

6 Roger visits the glasshouses many times each day to check the temperatures and the humidity of the soil. He has been told that a computer could control the environment of the glasshouses. Emma has not studied computer control.

Explain to Emma how the temperature and humidity in the glasshouses can be controlled by a computer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[6]

If you use these lined pages to complete the answer to any question, the question number **must** be clearly shown.

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

PLEASE DO NOT WRITE ON THIS PAGE