OCR
RECOGNISING ACHIEVEMENT

Tuesday 12 June 2012 – Afternoon

A2 GCE INFORMATION AND COMMUNICATION TECHNOLOGY

G063/01 Systems, Applications and Implications

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
None

Duration: 2 hours

Candidate forename		Candidate surname	

Centre number						Candidate number				

INSTRUCTIONS TO CANDIDATES

* Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
* Use black ink. HB pencil may be used for graphs and diagrams only.
* Answer **all** the questions.
* Read each question carefully. Make sure you know what you have to do before starting your answer.
* Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
* Do **not** write in the bar codes.

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 **120**, of which marks are allocated to the assessment of the quality of written communication where an answer requires a piece of extended writing. These questions are marked with an asterisk (*).
* This document consists of **20** pages. Any blank pages are indicated.

Turn over

Section A

Answer **all** questions.

1 Describe rapid application development (RAD).

....

....

....

.... **[2]**

2 Describe a difference between the requirements specification and the design specification.

....

....

....

.... **[2]**

3 **(a)** Describe how interactive processing could be used to prevent the double booking of theatre seats.

....

....

....

.... **[2]**

(b) Give **four** reasons why batch processing is used to process employees' salaries.

1 ....

....

2 ....

....

3 ....

....

4 ....

.... **[4]**

4 Describe **two disadvantages** of using a peer-to-peer network in a school.

1 ....

....

....

....

2 ....

....

....

.... **[4]**

5 (a) Give **two** comparisons between custom written and off-the-shelf solutions for a replacement stock control system within a small business.

....

....

....

....

....

....

....

....

.... **[4]**

(b) Phased is one method of changeover which could be used when installing the replacement stock control system in the business.

(i) Describe this method of changeover.

....

....

....

.... **[2]**

(ii) Explain **one** reason why the phased method of changeover is **not** suitable for the installation of the replacement stock control system.

....

....

....

.... **[2]**

6   Describe the services available to the individual that are offered by digital television networks.

....

....

....

....

....

....

....

....

....

....

.... **[6]**

PLEASE TURN OVER FOR QUESTION 7

Turn over

7   Advances in technology have enabled more employees to work from home.
    Explain **three** limitations on employees being able to work from home.

1   ....

    ....

    ....

    ....

2   ....

    ....

    ....

    ....

3   ....

    ....

    ....

    .... **[6]**

8   Describe **three** applications of an expert system.

1   ....

     ....

     ....

     ....

2   ....

     ....

     ....

     ....

3   ....

     ....

     ....

     .... **[6]**

PLEASE TURN OVER FOR SECTION B

Turn over

8

Section B

Answer **all** questions.

Questions 9–17 concern a dental surgery based in a small town.

A dental surgery occupies the upper floor of a building.

9   The dental surgery makes appointments for patients. The dental surgery has more than one dentist.

At each appointment, a patient will have at least one treatment. Payment is made after each appointment.

Create an Entity Relationship Diagram (ERD), resolving any many-to-many relationships and stating the degree of the relationship between the entities.

[4]

10 The dental surgery has had a new custom-written patient database system built.

(a) Explain **two** reasons why it is necessary to test the system before installation.

1 ....

....

....

....

2 ....

....

....

.... **[4]**

(b) Explain **three** issues the dental surgery will have to consider when getting support for the custom-written system.

1 ....

....

....

....

2 ....

....

....

....

3 ....

....

....

.... **[6]**

Turn over

11 The dental surgery's patient database system is to be managed remotely.

(a) Define the term bandwidth.

....

....

....

.... **[2]**

(b) Cable, infrared and wireless are examples of types of communication media.

(i) Rank cable, infrared and wireless, in terms of bandwidth, from lowest to highest.

Lowest   ....

....

Highest   ....   **[1]**

(ii) Describe **one** characteristic of wireless communication media.

....

....

....

.... **[2]**

(iii) Identify **one other** type of communication media.

.... **[1]**

(c) The ground floor of the building is occupied by a doctors' surgery. The dental surgery and doctors' surgery share the majority of patients in the area. Both surgeries are to be merged and renamed 'Awburn House Surgery'.

Explain **two** advantages of having all the computers at Awburn House Surgery networked.

1 ....

....

....

....

2 ....

....

....

.... **[4]**

(d) A switch is used to connect devices together.

Give **two** characteristics of a switch that can be used to control data across the network.

1 ....

....

2 ....

.... **[2]**

(e) Describe **three** possible limitations of wireless networking for Awburn House Surgery.

1 ....

....

....

....

2 ....

....

....

....

3 ....

....

....

.... **[6]**

(f) Give **two** comparisons between ADSL and a leased line for accessing the internet from Awburn House Surgery.

....

....

....

....

....

....

....

....

.... **[4]**

12 The dental surgery's custom-written patient database system is to be modified for use by both parts of the surgery.

   (a) Define what is meant by vertical partitioning of a database.

   ....

   .... **[1]**

   (b) Describe how the consistency and integrity of patient data across both parts of the surgery would be maintained in a vertically partitioned database.

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   ....

   .... **[6]**

13 The internet connection into Awburn House Surgery has become intermittent.

   Give **one** reason why the operator of an internet service provider's fault helpline would use a system which relies on rules and probabilities to give advice.

   ....

   .... **[1]**

14 The workload for the practice managers at Awburn House Surgery has become too much and a range of health problems are becoming apparent that relate to working with ICT.

State the health problem from the symptoms given and for each problem state the possible cause.

(i) **symptoms:** chronic pain experienced in the arms, shoulder or back

health problem ....

....

possible cause ....

.... **[2]**

(ii) **symptoms:** blood clot found in the leg

health problem ....

....

possible cause ....

.... **[2]**

(iii) **symptoms:** pressure on the median nerve in the wrist producing numbness in hand

health problem ....

....

possible cause ....

.... **[2]**

15 Awburn House Surgery has recently started to purchase most of their medical supplies from an online site.

(a) Explain the importance of matching the online ordering interface to the user's mental model.

....

....

....

.... **[2]**

(b) Due to the growth in business, the supplier's user interface will need to be redesigned.

Describe the user interface design tool known as the Model Human Processor.

....

....

....

.... **[2]**

(c) Describe **two** ways the model can be applied to the redesign of the user interface.

1 ....

....

....

....

2 ....

....

....

.... **[4]**

16* Discuss how external changes may affect Awburn House Surgery.

The quality of written communication will be assessed in your answer to this question.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

.... Turn over

....

....

....

....

....

....

.... **[11]**

PLEASE TURN OVER FOR THE LAST QUESTION

17* Discuss hardware and software developments that are changing or might change the way Awburn House Surgery treats patients.

The quality of written communication will be assessed in your answer to this question.

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

.... **[11]**

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE