

COMPUTER SCIENCE 2
595

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

JUNE 2014

ORDINARY LEVEL

Subject Title	COMPUTER SCIENCE
Paper No.	Paper 2
Subject Code No.	595

Two hours

Answer any FIVE questions.

All questions carry 20 marks each. For your guidance, the approximate mark for each part of a question is indicated in brackets.

You are reminded of the necessity for good English and orderly presentation in your answers.

In calculations, you are advised to show all the steps in your working, giving your answer at each stage.

Calculators are NOT allowed.

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Turn Over

1. (a) An Information System is typically described as having five components.
 - (i) List the five components of an Information System. (3 marks)
 - (ii) Explain the role of each component of an Information System. (5 marks)
 - (b) What is the function of a device driver in a computer system? Give an example of any Hardware device that requires a device driver. (2 marks)
 - (c) (i) List THREE physical and THREE wireless communication channels. (4 marks)
 - (ii) Describe any TWO physical and any TWO wireless communication channels listed in Question c(i) above. (6 marks)
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2. (a) With the aid of diagrams, explain the meaning of the following operational modes of a communication channel.
 - (i) Full - duplex (3 marks)
 - (ii) Broadcast (3 marks)
 - (iii) Multiplexing and demultiplexing (3 marks)
 - (b) (i) What do you understand by the term network topology? (2 marks)
 - (ii) With the aid of a sketch in each case state and describe two network topologies. (6 marks)
 - (c) Explain, with the aid of an illustration, the function of a MODEM in a Wide Area Network. (3 marks)
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3. (a) Computers today are used in all spheres of life. Briefly describe how computers are used in the following:
 - (i) Health care. (3 marks)
 - (ii) Education. (3 marks)
 - (iii) Industry. (3 marks)
 - (b) Explain what you understand by each of the following terms:
 - (i) Decision support system. (2 marks)
 - (ii) Expert system. (2 marks)
 - (iii) Transaction processing system. (2 marks)
 - (iv) Real time processing. (2 marks)
 - (c) Write in increasing order the first TEN, 4-bit binary numbers starting from zero (0000). (3 marks)
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4. (a) List and briefly describe two ways in which an algorithm can be represented. (5 marks)
 - (b) Study the scenario described below carefully and answer the question that follows:

A boy in a marathon race, presents himself at P, the starting point of the race. Running along a straight road, he comes to a road junction S and sees an indication that he needs to move straight ahead. Arriving at a round about R, he sees an arrow directing him to turn to the right. He then comes to a checkpoint T and is given a red ribbon. He continues to checkpoint U. At U, a yellow ribbon is added. He continues to checkpoint V. At V, the red and yellow ribbons are collected and a blue ribbon is given. He presents the blue ribbon at the finish point Q.

A robot is to be designed to carryout the activities described in the above scenario. Write an algorithm in NOT MORE THAN 15 LINES using pseudocode, to serve as instructions for the robot.
(You may use keywords/expressions such as: Move straight to, Move straight until, At, Collect, Deposit, Proceed)

(8 marks)
 - (c) Project management involves planning, monitoring and control. Explain the meaning of the underlined words. (3 marks)
 - (i) What is the difference between earliest start time and the earliest finish time. (2 marks)
 - (ii) According to the estimated duration for the project, a certain task delayed by one week, yet, the project was completed on time. Explain briefly a possible reason. (2 marks)

5. (a) State what you understand by the term database. (2 marks)
- (b) A common way to organise data is in the form of a hierarchy that comprise database, fields, characters, files and records.
List the items above in the following order: Simplest to the most complex. (2 marks)
- (c) Table 1 below is an extract from a table in a relational database management system (DBMS) that a school uses to keep track of its students.

Table 1

Student ID	Sex	Name
3	M	Eben L
13	F	Etondi J
20	M	Rejah C
6	F	Atanga K
10	F	Eben L

- (i) Draw table 1 in your answer booklet and identify any special field(s) and records in the table. (2 marks)
- (ii) State the special name that is given to the column labelled student ID in Table 1. What makes this column special compared to the others. (3 marks)
- (d) State whether or not the DBMS should allow you to carryout the following actions. Give a reason in each case.
- (i) Add a student to Table 1 with the following attributes:
Student ID = 6, Sex = F, Name = Ebai R. (2 marks)
- (ii) Add a student to Table 1 with the following attributes:
Student ID = 1000, Sex = M, Name = Rejah C (2 marks)
- (e) Briefly explain the following software tools:
- (i) IDE – Integrated Development Environment (3 marks)
- (ii) Text Editor (2 marks)
- Give an example in each case. (2 marks)
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6. (a) (i) State what you understand by computer security risks. (2 marks)
- (ii) State three ways by which a school can protect laptop computers located in the school's computer laboratory. (3 marks)
- (b) Encryption is a method used to prevent information theft.
- (i) State what you understand by encryption. (2 marks)
- (ii) Explain the encryption mechanism by outlining what happens to a message that needs to be encrypted, sent, and received from one person to another. (5 marks)
- (iii) State any one difference between encryption and use of password. (2 marks)
- (c) (i) State three functions of an operating system. (3 marks)
- (ii) List three examples of modern operating systems. (3 marks)

7. (a) In computer programming, briefly explain what you understand by the following:
- (i) Source code (2 marks)
 - (ii) Object code (2 marks)
 - (iii) Mnemonics (2 marks)
 - (iv) Machine language (2 marks)
 - (v) High level programming language (2 marks)
- (b) Explain briefly why there is need for maintenance in software development. (3 marks)
- (c) (i) What do you understand by a computer system bus? (2 marks)
- (ii) List the three main system buses and state the functions of any two of the system buses. (5 marks)
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