

# CXC IT JANUARY 2013

## Paper

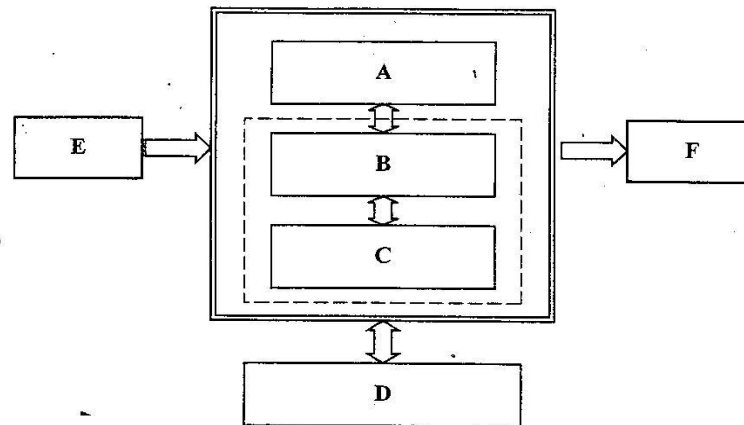
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### SECTION I

**THEORY – 60 marks**

**Answer ALL questions.**

1. Figure 1 illustrates the components of a computer system with letters A, B, C, D, E, and F representing hardware components.



**Figure 1. Components of a computer system**

- (a) Name the components A, B, C, D, E and F, given that the components B and C are enclosed in the CPU and the arrows represent the flow of data among the components. **(6 marks)**
- (b) Give ONE example of the type of device that may be found in each of the following labelled components.
- (i) B or C **(1 mark)**
  - (ii) D **(1 mark)**
  - (iii) E **(1 mark)**
  - (iv) F **(1 mark)**

**Total 10 marks**

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2. (a) Using the number 27, determine its:
- (i) octal equivalent (1 mark)
  - (ii) hexadecimal equivalent (2 marks)
- (b) Table 1 below contains four groups of data that make up various IP addresses accessed by a network. For example, 130.6.76.0 refers to a school network in the North area, on Floor D, accessed by PC44.

**TABLE 1: IP ADDRESSES ACCESSED BY A NETWORK**

Group 1	Network	Group 2	Network	Group 3	Location	Group 4	Location
127	College	6	North	73	Floor A	0	PC44
128	University	7	South	74	Floor B	1	PC59
129	Hospital	8	East	75	Floor C	2	PC12
130	School	9	West	76	Floor D	3	PC08

- (i) State the meaning of the term 'network'. (1 mark)
- (ii) Use the table to identify the IP address 128.8.74.3. (4 marks)
- (iii) Convert the number corresponding to **Group 4** in the IP address 128.8.74.3 to an eight-digit binary number. (2 marks)

**Total 10 marks**

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3. Most schools do not have the telephone numbers of other schools. The Minister of Education has requested his Information Technology Department to recommend a method of recording and distributing the telephone numbers to all schools.

- (a) The Minister has decided NOT to produce and distribute the data in a hard copy form.
- (i) State what is meant by 'hard copy'. (1 mark)
  - (ii) Give TWO possible reasons to explain the Minister's decision for NOT using hard copies. (2 marks)
- (b) One recommendation is that the telephone numbers should be stored on a CD and then distributed to schools.
- (i) State the meaning of the term 'CD'. (1 mark)
  - (ii) State whether a CD is a primary or secondary storage device. (1 mark)
  - (iii) Give TWO reasons to justify the recommendation to use a CD. (2 marks)
  - (iv) Name TWO types of CD that could be recommended. (2 marks)
  - (v) Give ONE reason why a flash memory card would NOT be suitable in this case. (1 mark)

**Total 10 marks**

4. (a) A school is expanding its computer network and the process involves using cables and various types of networks.

Name:

- (i) the type of network that consists of computers within a small area (1 mark)
- (ii) the type of cabling that consists of a copper wire covered by a thick layer of insulation (1 mark)
- (iii) the type of cabling that consists of clear glass fibres enclosed in an outer sheath (1 mark)
- (iv) the type of transmission that is capable of transmitting data at a rate of more than 1000 characters per second (1 mark)
- (v) the protocol that a network uses for radio frequencies between wireless devices. (1 mark)

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- (b) Write the Roman numerals (i) to (v) in your answer booklet. Match EACH of the job responsibilities (i–v) to the letters (A) to (E) that correspond to the MOST appropriate computer-related professional. (Your answer should show the Roman numerals and letters only.)

	Job Responsibility		Professional
(i)	Works with programmers to develop and test the system	A	Database Administrator
(ii)	Keeps data up-to-date	B	Computer Technician
(iii)	Carries out the day-to-day maintenance tasks with hardware and software	C	Computer Engineer
(iv)	Develops and installs the software used in a network	D	System Analyst
(v)	Determines the network cabling requirements and layout	E	Network Administrator

(5 marks)

**Total 10 marks**

5. Select any ONE of the following professions:

- Music
- Teaching
- Medicine

For the profession selected:

- (a) Describe ONE positive impact and ONE negative impact that Information Technology (IT) has had on that profession. (4 marks)
- (b) Give ONE example of a hardware device or type of software that is used in the profession. (Write the name of the device or software in full.) (2 marks)
- (c) Describe how the hardware device or type of software you have named in Part (b) is used. (4 marks)

**Total 10 marks**

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A student registration system at New Age High School requires students to complete a registration form.

- (a) In order to verify the data, the data from this form are keyed in by one clerical officer at the school and then re-entered by another clerical officer.
- (i) Name the data verification method described above. **(1 mark)**
  - (ii) Describe ONE type of error that the data verification method would detect. **(2 marks)**
  - (iii) State how the error in (a) (ii) above is detected. **(1 mark)**
  - (iv) Outline how the error in (a) (ii) above can be corrected. **(2 marks)**
- (b) After the data are verified, a program scans the data entered to validate the data submitted by the students. State the name of EACH validation check for EACH of the examples below:
- (i) The student's name does not contain any special characters. **(1 mark)**
  - (ii) The student's date of birth is after 31 August 2000 but before 01 September 2001. **(1 mark)**
  - (iii) The student's weight is greater than 500 lbs. **(1 mark)**
  - (iv) The student's age on the form is correct given the student's date of birth. **(1 mark)**

**Total 10 marks**

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### SECTION II

#### PRODUCTIVITY TOOLS – 15 marks

Answer ALL questions.

7. The table below shows the structure of a YOUTH table.

**TABLE 2: YOUTH TABLE**

Field	Data Type	Description
IDNo	Number	A 4-digit identification number assigned to the person
Name		Name of person e.g. John Smith
DOB		Date on which a person was born e.g. 22/11/87
Phone		Phone contact of the person in the format xxx-xxxx

- (a) State an appropriate data type for EACH of the fields: Name, DOB and Phone. **(3 marks)**
- (b) State the MOST appropriate field that should be a primary key. **(1 mark)**
- (c) Write a query to obtain the names of ALL youths born after 31 December 1994. **(4 marks)**

**Total 8 marks**

8. The following questions relate to word processing.

- (a) List the FOUR steps involved in moving a paragraph from the beginning of a word processing document and placing it on the last page of the document. **(4 marks)**
- (b) Briefly describe how you can place your cursor on a new page when your cursor is on the current page. **(2 marks)**
- (c) State the word processing feature that can be used to send a personalized letter to 500 clients. **(1 mark)**

**Total 7 marks**

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### SECTION III

#### PROBLEM SOLVING AND PROGRAMMING – 45 marks

Answer ALL questions.

9. Consider the following program code:

```
1 Program Test;
2 Var Num1, Num2, answer : integer;
3
4 Begin
5     Write('Enter first one ');
6     Readln(Num1);
7     Write('Enter second one ');
8     Readln(Num2);
9     Answer := Num1 * Num2;
10    Writeln('The result is ', Answer);
11 End.
```

- (a) State the name of the programming language used to write the code. (1 mark)
- (b) Explain whether the code in lines 5 to 10 represents a loop, selection, or sequence of statements. (2 marks)
- (c) State the specific purpose of the **writeln** command. (1 mark)
- (d) Write the output from the program when Num1 = 3 and Num2 = 4. (8 marks)
- (e) The following set of values are input:

Set A: Num1 = 0      Num2 = 5  
Set B: Num1 = 2.5    Num2 = 5

Write Set A and Set B on separate lines in your booklet. For EACH set of values:

- (i) State whether a logic error, syntax error or no error is produced. (2 marks)
- (ii) If an error is produced, indicate whether the value in Num1 or Num2 has caused the error. (1 mark)

**Total 15 marks**

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10. (a) State TWO programming languages EACH that are categorized as
- (i) low-level (2 marks)
  - (ii) high-level. (2 marks)
- (b) Rewrite the following list to show the correct order of steps associated with implementing a program:
- (i) Compile
  - (ii) Write source code
  - (iii) Execute
  - (iv) Maintain
  - (v) Link (5 marks)
- (c) State the name of the code that a program uses for executing. (1 mark)

**Total 10 marks**

11. Consider the following array named LIST.

I	N	F	O	R	M
1	2	3	4	5	6

State:

- (a) the size of the array (1 mark)
- (b) the data type of the contents of the array (1 mark)
- (c) the output produced from the array after executing the following fragment of code:

```
For Count := 4 to 7 DO  
  Write(LIST[Count-1]);
```

(3 marks)

**Total 5 marks**



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12. Daniel wrote the program below to print the larger of two numbers, assuming that the two numbers are not equal. When Daniel compiled the program there were SEVEN errors.

```
1 Program Largest
2 Var X; Y: char;
3 Begin
4     Input(X, Y);
5     If X < Y
6     Then Writeln ('X is the larger number');
7     Else Writeln ('Y is the larger number')
8 End;
```

- (a) Identify the line number of EACH error and rewrite the correct statement. (14 marks)
- (b) All the seven errors are of the same type. State the name of this type of error. (1 mark)

**Total 15 marks**

**END OF TEST**

**IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.**