INTI
International College Subang
LAUREATE INTERNATIONAL UNIVERSITIES

FINAL
Examination Paper

(COVER PAGE)

Session	:	**August 2012**
Programme	:	Diploma in Information And Communication Technology Programme (DICTN)
Course	:	**ICT 1101: Program Logic Formulation**
Date of Examination	:	December 7, 2012
Time	:	11:00am – 1:00pm Reading Time: Nil
Duration	:	2 Hours
Special Instructions	:	

Section A: Multiple Choice questions. Answer ALL questions.

Section B: Answer any **THREE (3)** questions.

Materials permitted :

Nil

Materials provided :

Nil

Examiner (s)	:	**Ms Annida Said,** Shee Fui Chie.
Moderator	:	Dr. Ang Tan Fong

This paper consists of 7 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (DICTN)
ICT1101 : PROGRAM LOGIC FORMULATION
FINAL EXAMINATION : AUGUST 2012 SESSION

SECTION A : 40 marks

Instruction : This section consists of **TWENTY (20)** questions. Answer **ALL** questions in the OMR sheet provided. All questions carry equal marks.

1. The following problem cannot be solved using algorithmic solution *except* :

   (A) Telling how to find the best noodle
   (B) Giving instructions on how to bake the most delicious cake
   (C) Guiding how to drive a car in all situations
   (D) Giving directions to travel from point A to point B
   (E) All of the above

2. Which of the following is **NOT** a valid variable name?

   (A) _small
   (B) 9Eight
   (C) MyFM
   (D) g42277
   (E) Peacefull_city

3. Global variable is a variable that _____.

   (A) Is used by each module separately
   (B) Can be seen by all module in a program
   (C) Can use the same name as local variable
   (D) Has a fixed value
   (E) Is sent from one module to another module

4. The following are the pointers to develop an efficient solution *except* :

   (A) Use the four logic structure to assure smooth flow of solution
   (B) Use techniques to improve readability of the solution
   (C) Eliminate the rewriting of identical processes
   (D) Use modules to break the whole solution into smaller parts
   (E) None of the above.

5. Which of the following will **NOT** increase the value of num by 1?

   (A) num +1
   (B) num++
   (C) num += 1
   (D) num = num + 1
   (E) None of the above

6. Values that are used to end loops are referred to as _____ values.

(A) sentinel
(B) final
(C) stop
(D) terminate
(E) null

7. Which of the following function must contain in all C++ programs?

(A) start( )
(B) system( )
(C) main( )
(D) program( )
(E) None of the above.

8. Which of the following operators are arranged in the correct precedence?

(A) <, AND, >, +
(B) OR, +, <=, NOT
(C) *, –, OR, <>
(D) /, +, <, NOT
(E) +, <, OR, NOT

9. In a group of nested loops, which loop is executed the most number of times?

(A) The outermost loop.
(B) The innermost loop.
(C) All loops are executed the same number of times.
(D) Cannot be determined without knowing the size of the loops.
(E) (b) & (d)

10. Which of the following are the columns in a PAC?

(A) Input, Processing, Module reference number, Output
(B) Given data, Module name, Module number, Output
(C) Input, Required result, Output, Solution alternatives
(D) Given data, Required result, Processing required, Solution alternatives
(E) None of the above

11. Modules are coupled through the use of _____.

(A) Global variable
(B) Parameters
(C) Module name
(D) A and B
(E) A, B and C

12. Consider this switch statement:

```
CASE OF variable
        = 20 :  x = 2
        = 21 :  test = 3
        PRINT "Enter new value of x"
        OTHERWISE :  test = 4
END-OF-CASE
```

Which of the following statements is TRUE?

(A) The instruction does nothing unless variable is either 20 or 21.
(B) If variable has the value 21, then test is set to the value 4.
(C) If variable has the value 20, then variable *test* is not changed.
(D) If variable has the value 16, then the Case Logic Structure display a prompt on the screen.
(E) The Case Logic Structure test the value of test in order to decide what action to take.

13. What is meant by the *cohesion* of a module?

(A) The connection between modules that allows interaction.
(B) The interface used to sent data from a module to another.
(C) The functional independence of a module to perform a single task.
(D) The usage of parameters in a solution.
(E) The use of multiple entry and exit within a module.

14. The type(s) of decision logic structure is/are _____.

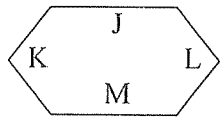
(A) Positive logic
(B) Negative logic
(C) Straight–through logic
(D) A and B
(E) A, B and C

15.
```
1.    Begin
2.    x = 0
3.    Loop: x = 1 TO 4 Step 1
            Print x
      Loop-end: x
4.    Print x
5.    End
```

What will be printed when the algorithm above is executed?

(A) 0 1 2 3 4 4
(B) 0 1 2 3 4 5
(C) 1 2 3 4
(D) 1 2 3 4 4
(E) 1 2 3 4 5

16. The following symbol represents an automatic–counter loop. What is indicated by J, K, L and M?



(A) J – Variable, K – Start value, L – Increment, M – End value
(B) J – Start value, K – Variable, L – Increment, M – End value
(C) J – Variable, K – Increment, L – End value, M – Start value
(D) J – Variable, K – Start value, L – End value, M – Increment
(E) J – Start value, K – Variable, L – End-value, M – Increment

17. Which of the following is an invalid condition for an IF/THEN/ELSE statement?

(A) a + 200 =< b
(B) sales > 265 and sales < 1050
(C) number < 5 or number > tax *10
(D) amount >= 100
(E) C -200 <> D

18. When a _____ parameter used, the value of the variable is sent to the called module by calling module.

(A) Call-by-value.
(B) Call-by-reference.
(C) Formal.
(D) Constant.
(E) Variable.

19. An expression _____.

(A) Stores the resultant of a mathematical calculation.
(B) Do not produce any result from a process
(C) Processes data, that is the operands through the use of operators
(D) Will send its result to a variable automatically
(E) Processes variables only

20. Which of the following **DOES NOT** produce a TRUE answer, if A is TRUE, B is FALSE and C is TRUE?

(A) NOT (A AND B) OR (B AND C)
(B) A OR NOT B AND (C OR A)
(C) B AND C OR A
(D) A AND C AND B
(E) A OR B AND NOT A OR C

SECTION B : 60 marks

Instruction : This section consists of **FOUR** (4) questions. Answer any **THREE** (3) questions in the answer booklet provided. All questions carry equal marks.

Question 1

(a) Write a logical expression for each of the following statements.

(i) A customer will get a discount of 15% if the total purchase is more than RM200.
(ii) Test whether a number is a positive number or a negative number, and display output accordingly.
(iii) Display "CORRECT" if answer is 1 and "WRONG" if answer is 0.

(6 marks)

(b) By referring to the table given below, draw an *IPO chart* to display the water quantity of a size chosen by user. Use *Case logic structure*.

Size	Water Quantity
S	100 ml
M	175 ml
L	250 ml

(7 marks)

(c) Write an algorithm, that reads 2 numbers and swap the variables' value (value of first variable should be in second variable and vice versa). Display the numbers before and after swapping.

(7 marks)

Question 2

(a) Define the data types of the following data items. Justify your answers.
(i) Highest CGPA (Cummulative Grade Point Average)
(ii) Software serial number
(iii) Number unit of thumb drive
(iv) Interest rate
(v) Check status on an application

(10 marks)

(b) Design an algorithm to prompt today's day in number and display the day after tomorrow in word. If the input for day is 2, then display the days in word as Wednesday.

Number	Day
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday

(10 marks)

Question 3

(a) Draw the flowchart that display the following sequences of values:

(i) Using REPEAT/UNTIL loop

1, 3, 5, 7, 9

(ii) Using Automatic-counter loop

-6, -5, -4, -3, -2

(10 marks)

(b) Develop a coupling diagram of a program that prompts the user to enter a positive value for base and a positive value for exponent. The program calculates and displays the power of the base to the exponent shown in the formula:

$$\text{Power} = \text{base}^{\text{exponent}}$$

(10 marks)

Question 4

(a) Explain the difference between *counter-controlled* and *sentinel-controlled* repetition structure. Give an example to show the difference.

(6 marks)

(b) A company has decided to give salary increment to its employees based on the assessment mark they obtained. The table below shows the rate of increment given to employees. The Human Resource officer should enter an employee name, assessment mark and salary, in order to calculate the new salary. The program should display an employee's new salary. Solve the above problem using the following tools :

Assessment Mark	Increment
0 – 25	0%
26 – 50	2%
51 – 75	5%
76 – 100	8%

(i) Problem Analysis Chart

(6 marks)

(ii) Algorithm

(8 marks)

--THE END--