



FINAL
Examination Paper
(COVER PAGE)

Session : August 2014

Programme : Diploma In Information And Communication Technology (DICTN)
Diploma In Mechanical Engineering (DMEN)

Course : ICT1101 : Program Logic Formulation

Date of Examination : December 8, 2014

Time : 5:00pm – 7:00pm Reading Time: Nil

Duration : 2 Hours

Special Instructions :

Section A : Answer ALL Multiple Choice questions.

Section B : Answer any THREE (3) questions.

**IMPORTANT NOTE : THIS PAPER SHOULD NOT BE TAKEN OUT OF THE
EXAMINATION HALL**

Materials permitted : Nil

Materials provided : OMR sheets

Examiner (s) : Ms. Shee Fui Chie, Koo Lee Chun.

Moderator : Ms. Jane Lim See Yin

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (DICTN)
DIPLOMA IN MECHANICAL ENGINEERING (DMEN)
ICT1101: PROGRAM LOGIC FORMULATION
FINAL EXAMINATION: AUGUST 2014 SESSION

SECTION A (40 marks)

Instructions: This section consists of **TWENTY (20)** questions. Answer **ALL** questions in the **OMR** sheet provided.

1. With a logic error, the program can be _____ (supposing there are no other errors), but produces the wrong answer when executed.
 - A. executed
 - B. ran
 - C. compiled
 - D. interpreted
 - E. all of the above

2. A(n) _____ scans the entire program and translates it as a whole into machine code.
 - A. compiler
 - B. interpreter
 - C. assembler
 - D. translator
 - E. all of the above

3. The decision symbol has _____.
 - A. One entrance and one exit path
 - B. One entrance and two exit path
 - C. Two entrances and one exit path
 - D. Two entrances and two exit path
 - E. No entrance and no exit path

4. _____ shows all the subtasks or modules in a program.
 - A. Problem Analysis Chart
 - B. Structure Chart
 - C. Input-Process-Output Chart
 - D. Flowchart
 - E. Coupling Diagram

5. To test a condition means to process a condition to get a _____ resultant.

- A. True or False
- B. Positive or Negative
- C. Big or Small
- D. Greater or Smaller
- E. High or Low

6. 1. BEGIN
 2. R=0
 3. WHILE R < 2
 R = R + 1
 PRINT R
 WHILE-END
 4. END

Consider the above algorithm. How many iteration(s) for the loop after the algorithm executed?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

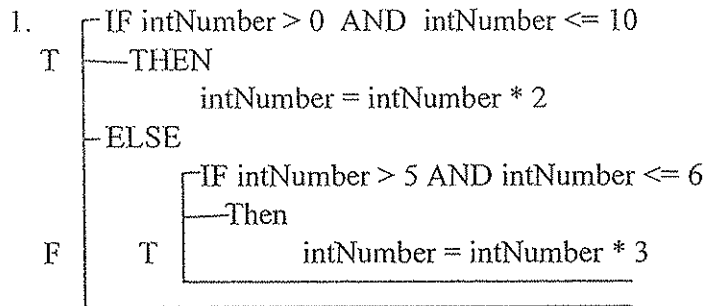
7. If you have a problem with multiple conditions and multiple consequent actions, _____ is an excellent tool to discover all actions that correspond to particular conditions.

- A. Problem Analysis Chart
- B. Input-Process-Output Chart
- C. Decision Table
- D. Coupling Diagram
- E. Data Dictionary

8. The functions use to calculate maximum and minimum values are _____.

- A. mathematical functions
- B. string functions
- C. utility functions
- D. conversion functions
- E. statistical functions

9. Assume the *intNumber* variable contains the number 19. What value will be in the *intNumber* variable after the following instructions are processed?



- A. 19
 B. 38
 C. 57
 D. 60
 E. None of the above.
10. With decision following _____, all conditions are tested.
- A. straight-through logic
 B. positive logic
 C. negative logic
 D. nested ifs instruction
 E. all of the above
11. Which of the following data items shall be assigned to integer data type?
- I. Total number of students absent in a class.
 II. Height of a student
 III. Postal code
 IV. Price of a car
- A. I only
 B. I and II only
 C. I and III only
 D. II and IV only
 E. I, II and IV only
12. Which of the following variable name(s) is (are) VALID?
- A. Total_Students.
 B. ThankYou
 C. Jan13Payment
 D. SteveJob
 E. All of the above

13. Assume A, B, C and D are variables. Which of the following computer expression(s) is (are) INVALID?
- I. $A \div B + 7$
 - II. $A * 10\%$
 - III. $A + C (D - E)$
 - IV. $(A+B) - D * 100$
- A. I and II only
 - B. III and IV only
 - C. II and III only
 - D. I, II, III only
 - E. I, II, III and IV
14. Which of the following is (are) the general instruction(s) for loop logic structure?
- I. Initialization of loop control variable.
 - II. Test of the loop control variable.
 - III. Update of the loop control variable.
 - IV. Setting of the loop control variable.
- A. I only
 - B. I and II only
 - C. I and III only
 - D. II and IV only
 - E. I, II and III only
15. The following problems cannot be solved using algorithmic solution EXCEPT _____.
- A. Telling how to find the most delicious economic rice in Penang.
 - B. Giving the instruction how to build a house model with LEGO.
 - C. Guiding how to avoid all accidents while driving
 - D. Giving the instruction how to take care a baby
 - E. All of the above

16. The iteration of _____ loop is at least zero.

- I. WHILE/WHILE-END
- II. REPEAT/UNTIL
- III. Automatic-counter

- A. I only
- B. I and II only
- C. II and III only
- D. I and III only
- E. I, II and III

17. Which of the following instruction(s) DO(ES) NOT change the value of X ?

- I. $Y = X + 1$
- II. $X = X + Y$
- III. $Y = \text{SQRT}(X)$

- A. I. Only
- B. I and II Only
- C. I and III Only
- D. I, II and III
- E. None of the above

18.

```

Y= 1
LOOP: X = 1 TO 5 STEP 2
      Y= Y + X
LOOP-END: X

```

Consider the above instructions. What is the final value of Y after the instructions executed?

- A. 1
- B. 5
- C. 8
- D. 10
- E. 16

19. Modules are couple through the use of _____
- A. global variables
 - B. module name
 - C. parameters
 - D. A and B
 - E. A, B and C

20. Consider the following instructions:

```
CASE OF vType  
  = 'G': X = 10  
  = 'B': Y = 60  
  OTHERWISE: DISPLAY "Invalid input "  
END-OF-CASE
```

Which of the following statements is TRUE?

- A. The Case Logic Structure test the value of X and Y in order to decide what action to take.
- B. The Case Logic Structure does nothing unless vType is 'G' or 'B'.
- C. If vType is 'G', X is set to value 10 and Y is set to 60;
- D. If vType is 'B', X remain unchanged and Y is set to 60;
- E. The Case Logic Structure is unable to rewrite in Decision Logic Structure

SECTION B (60 marks)

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

Question 1

(a) Convert the following mathematical equations to computer readable equations:

(i) $A = 6 - B^2$

(ii) $Q = 1 + \frac{4A}{X}(3 + B)$

(iii) $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$

(6 marks)

(b) Assume A = FALSE, B=FALSE, C=TRUE and D=FALSE. Find the value of x for each of the following Boolean expression:

(i) $X = C \text{ OR NOT } (B \text{ AND } C) \text{ OR } (A \text{ AND } B \text{ OR NOT } (A \text{ AND } C))$

(ii) $X = A \text{ OR } B \text{ AND } C \text{ AND } D \text{ OR NOT } B$

(iii) $X = \text{NOT } (A \text{ OR } B) \text{ AND NOT } (B \text{ OR } C)$

(6 marks)

(c) Suppose an investor deposited an amount into a savings account and let it earn at 3% interest rate annually. At the end of the year, print out the interest earned and total amount saved. Solve the mentioned problem with a problem analysis chart (PAC).

(8 marks)

Question 2

(a) Design an algorithm for the following problem in straight-through decision logic structure:

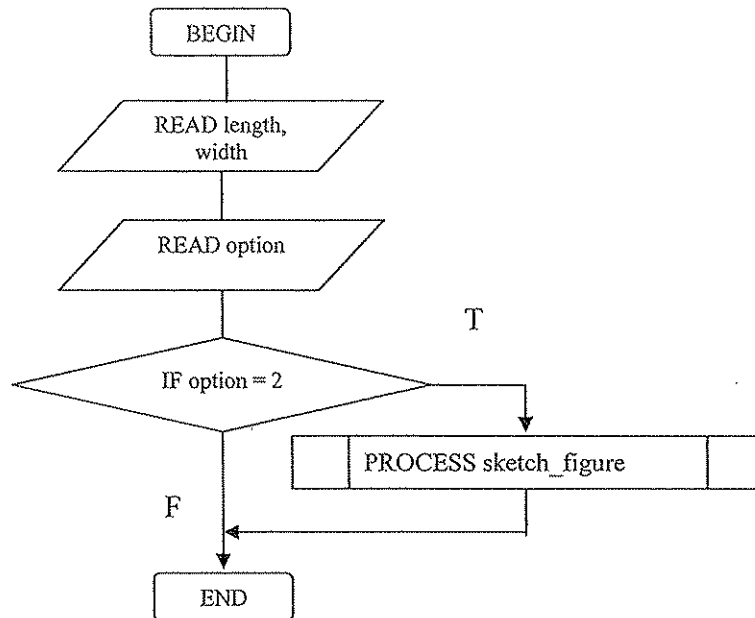
If a person's age is greater than or equal to 55, then display "senior citizen". If the person's age is between 21 and 55, then display "an adult". If the person's age is less than 21 but greater than 12 years old, then display "a youth". Lastly, if the person's age is less than 12 years old, display "a child".

(10 marks)

(b) State the difference between *name of a variable* and *value of a variable*. Give an example for each.

(5 marks)

(c) Convert the following flowchart into algorithm:



(5 marks)

Question 3

(a) Differentiate between pre-condition and post-condition loop. Write an example of algorithm for each case to support your answer.

(8 marks)

(b) Draw a flowchart for the following algorithm:

1. Value = 0
2. Counter = 123
3. WHILE counter > 0
 - Value = Value + Counter
 - Counter = Counter \ 10
 - IF Value MOD 2 = 0 THEN
 - Display "EVEN"
 - ELSE
 - Display "ODD"
- END-WHILE

4. Display "Value is ", Value

(12 marks)

Question 4

(a) Write an algorithm to produce the following output:

```
1 2 3 4
1 2 3 4
1 2 3 4
1 2 3 4
```

(6 marks)

(b) Name and describe **FOUR (4)** types of modules.

(8 marks)

(c) Design Loop Logic Structure to display the numbers from 100 to 200. Each line only displays five numbers. Use REPEAT/UNTIL Loop for iteration and show your solution in algorithm

(6 marks)

-THE END -
ICT1101 (F)/August 2014/