



FINAL
Examination Paper

(COVER PAGE)

Session : January 2015

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

Course : ICT1101 : Program Logic Formulation

Date of Examination : March 9, 2015

Time : 2:00pm – 4:00pm 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

Moderator : Ms. Pawani T. Rasaratnam

This paper consists of 11 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (DICTN)
DIPLOMA IN MECHANICAL ENGINEERING (DMEN)
ICT1101: PROGRAM LOGIC FORMULATION

FINAL EXAMINATION: JANUARY 2015 SESSION

SECTION A: (40 marks)

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

1. With a _____ error, the program can be execute (supposing there are no other errors), but produces the wrong answer when executed.
 - A. syntax
 - B. logical
 - C. run-time
 - D. flaw
 - E. failure

2. A compiler scans the entire program and translates it as a whole into _____ code.
 - A. machine
 - B. source
 - C. native
 - D. pseudo
 - E. all of the above

3. The case 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 how data can be passed to modules in a program.
 - A. Problem Analysis Chart
 - B. Structure Chart
 - C. Input-Process-Output Chart
 - D. Flowchart
 - E. Coupling Diagram

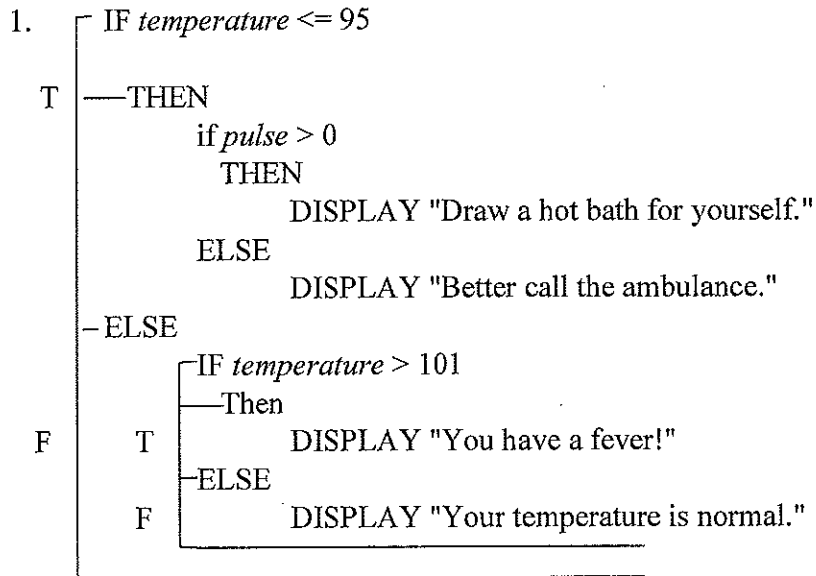
5. _____ loops are useful when you know that you want your loop to execute at least one time.
- A. WHILE/WHILE-END
 - B. REPEAT/UNTIL
 - C. Automatic-counter
 - D. All of the above
 - E. None of the above

- 6.
- ```
1. BEGIN
2. R=10
3. WHILE R < 20
 R = R + 1
 PRINT R
 WHILE-END
4. END
```

Consider the above algorithm. How many iterations are there for the loop after the algorithm is executed?

- A. 9
  - B. 10
  - C. 11
  - D. 19
  - E. 20
7. \_\_\_\_\_ contains a collection of descriptions of the variable.
- A. Problem Analysis Chart
  - B. Input-Process-Output Chart
  - C. Decision Table
  - D. Coupling Diagram
  - E. Data Dictionary
8. The functions used to transform string to number are \_\_\_\_\_.
- A. conversion functions
  - B. string functions
  - C. utility functions
  - D. mathematical functions
  - E. statistical functions

9. Assume the *temperature* and *pulse* variables contain the number 102 and 75 respectively. What message will display after the following instructions are processed?



- A. Draw a hot bath for yourself.  
 B. Better call the ambulance.  
 C. You have a fever!  
 D. Your temperature is normal.  
 E. None of the above.
10. \_\_\_\_\_ allows choosing between two or more execution paths in a program.
- A. Straight-through logic  
 B. Positive logic  
 C. Negative logic  
 D. Case logic  
 E. All of the above
11. Three types of logic structures are sequential, decision and \_\_\_\_\_.
- A. repeat  
 B. loop  
 C. redo  
 D. duplication  
 E. echo

12. Which of the following variable name(s) is (are) INVALID?

- I. Test\_mark
  - II. 2ndRunnerUp
  - III. BillGate
  - IV. hotel's
- A. II only
  - B. IV only
  - C. II and IV only
  - D. I and III only
  - E. II and III only

13. The constant value in a case logic structure must evaluate to a value that can be promoted to a(an) \_\_\_\_\_ value.

- I. integer
  - II. real
  - III. character
  - IV. Boolean
- A. I only
  - B. III only
  - C. II and IV only
  - D. I, II, III only
  - E. I and III only

14. What is the output of the following code fragment when *opn* is 'B'?

```

1. {
 Case of opn
 ='a': DISPLAY "Platform independent"
 ='b': DISPLAY "Program logic formulation"
 ='c': DISPLAY "Object oriented"
 = Otherwise: DISPLAY "Wrong input"
 End-of-case
}

```

- A. Platform independent
- B. Program logic formulation
- C. Object oriented
- D. Wrong input
- E. None of the above

15. Which of the following data items shall be assigned to character data type?
- I. Car plate number.
  - II. Height of a student
  - III. Postal code
  - IV. Price of a house
- A. I only
  - B. III only
  - C. I and III only
  - D. II and IV only
  - E. I, II and III only
16. The \_\_\_\_\_ loop executes until its loop-termination condition becomes True.
- A. WHILE/WHILE-END
  - B. REPEAT/UNTIL
  - C. Automatic-counter
  - D. A and B
  - E. A and C
17. The \_\_\_\_\_ expression logically joins two expressions; if both expressions evaluate to false, then it returns false; otherwise it returns true.
- A. OR
  - B. AND
  - C. NOT
  - D. A and C
  - E. B and C
18. Kim has just constructed her first loop for a program. Which of the following is not required for a loop control variable?
- A. Initialization
  - B. Test
  - C. Update
  - D. Scanning
  - E. None of the above

19. Many times, a compound expression can be replaced with a \_\_\_\_\_ statement.
- A. single IF
  - B. single IF-ELSE
  - C. multiple IF-ELSE
  - D. nested IF
  - E. All of the above
20. Which of the following statements are correct about decision logic structure?
- I. Every decision logic structure can be replaced by a case logic structure.
  - II. Nested IF statements are allowed.
  - III. Multiple statements in an IF block are allowed.
  - IV. Multiple statements in an ELSE block are allowed.
- A. 1 and 2
  - B. 2 and 3
  - C. 1, 2 and 4
  - D. 2, 3, 4
  - E. All of the above

**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) Show the values of variable **Q** after the execution of the following statements where  $A = 2$ ,  $B = 3$ , and  $C = -5$ :

(i)  $Q = \text{ABS}(6 - B^3 - C)$

(ii)  $Q = (5 + B) \text{ MOD } (A + 1) - (3 + C)$

(iii)  $Q = 10 \setminus \text{MAX}(A, B, C)$

(6 marks)

(b) Provide a truth table for  $(B \text{ OR } C) \text{ AND NOT } A$ .

(8 marks)

(c) List and describe **THREE (3)** basic types of data.

(6 marks)

**Question 2**

(a) Assume a program will request user to enter the information of a student's name, age, birth date, final examination mark, and paid tuition fee (TRUE or FALSE). Display the message "Tuition fee is pending!" if paid tuition fee is FALSE, otherwise display "Tuition fee paid.". Design a problem analysis chart (PAC) for this program.

(9 marks)

(b) Identify the appropriate logic structure(s) that can apply to solve the following problem:

*Write an algorithm to change the value of X to 0 when X becomes greater than 100, and to change the value of Y to 0 when Y becomes greater than 250.*

(3 marks)

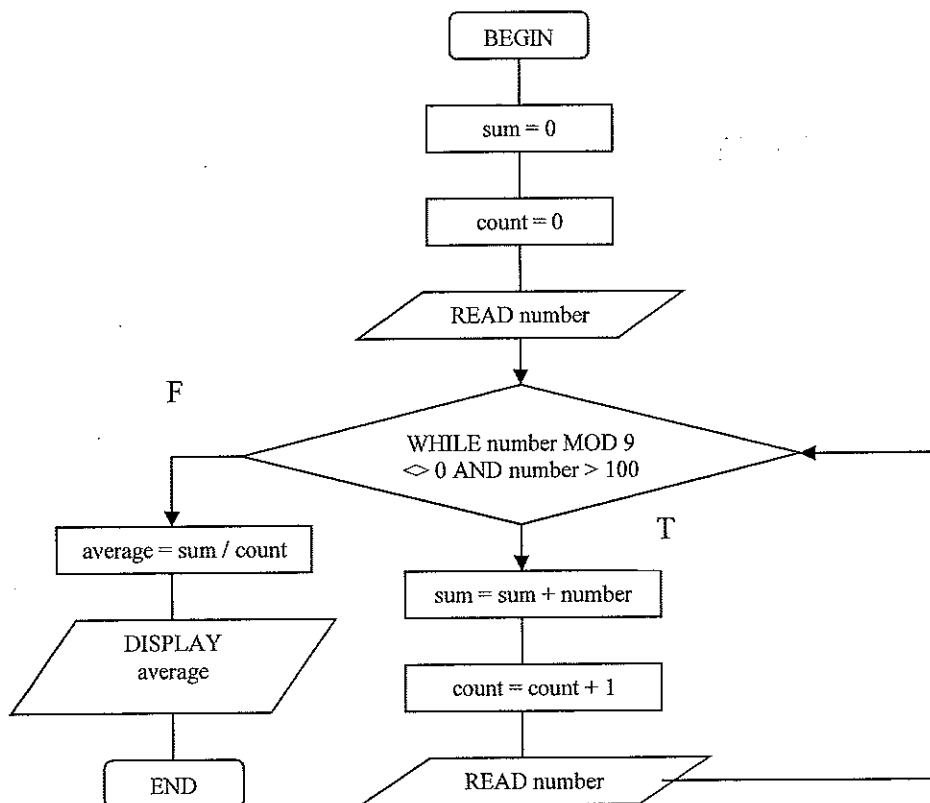
(c) Rewrite the following algorithm in case logic structure:

1. IF Grade = 'A' THEN  
T DISPLAY "Excellent"
2. IF Grade = 'B' OR Grade = 'C' THEN  
T DISPLAY "Well Done"
3. IF Grade = 'D' OR Grade = 'E' THEN  
T DISPLAY "Do better next time"
4. IF Grade = 'F' THEN  
T DISPLAY "Try again"
5. IF Grade < 'A' OR Grade > 'F' THEN  
T DISPLAY "Invalid Grade"

(8 marks)

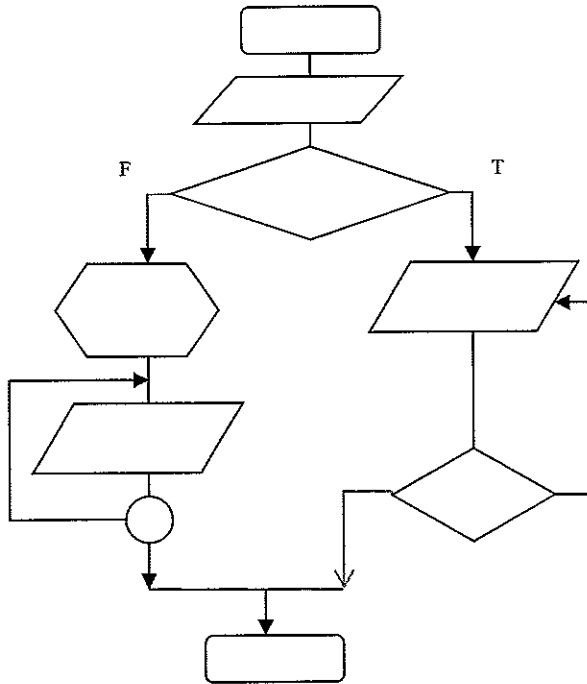
**Question 3**

(a) Convert the following flowchart into algorithm:



(6 marks)

- (b) What are the **THREE (3)** differences between compiler and interpreter? Give **ONE (1)** example of programming languages that is compiler and **ONE (1)** example for interpreter. (8 marks)
- (c) Identify the logic structure(s) of the following flowchart:



(6 marks)

**Question 4**

- (a) Write an algorithm to produce the following output in a nested loop:

```

1 2 3
4 5 6
7 8 9

```

(6 marks)

- (b) Give **TWO (2)** examples of the following functions:
- (i) String functions
  - (ii) Conversions functions
  - (iii) Statistical functions

(6 marks)

- (c) Write an algorithm for a loop logic structure that requests user to input the number of holidays and to calculate the total number of holidays from January to December. Display error message if the number of holidays is not positive.

Sample input and output:

Enter month 1: 5

Enter month 2: 1

Enter month 3: 0

Enter month 4: 2

.

.

.

Enter month 12: 4

Total holiday from January to December = 24 days

(8 marks)

**- THE END -**

*ICT1101 (F)/January 2015/*