



**FINAL**  
Examination Paper

(COVER PAGE)

Session : AUGUST 2017

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

Course : ICT1101: Program Logic Formulation

Date of Examination : 12 December, 2017 (Tuesday)

Time : 2:00 pm – 4:00 pm Reading Time : Nil

Duration : 2 Hours

**Special Instructions :**

**SECTION A:** Answer **ALL** multiple choice questions.

**SECTION B:** Answer any **THREE (3)** essay questions.

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

Materials permitted : Nil

Materials provided : OMR Sheets

Examiner(s) : Koo Lee Chun, Yogeswari Suppiah and Siti Hajar

Moderator : Pawani T Rasaratnam

*This paper consists of 9 printed pages, including the cover page*

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY  
PROGRAMME (DICTN)  
DIPLOMA IN MECHANICAL ENGINEERING PROGRAMME (DMEN)  
ICT1101: PROGRAM LOGIC FORMULATION  
FINAL EXAMINATION: AUGUST 2017 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. Which of the following statement is *valid*?
  - A. With logic error, the program can be executed but produced incorrect result
  - B. Only 1 or 0 are the valid data for a constant.
  - C. An interpreter scans the whole program and translate into machine language at once.
  - D. The value of a variable will never change during the processing.
  
2. If  $X < Y$  is false, then \_\_\_\_\_ is always true.
  - A.  $X > Y$
  - B.  $X \diamond Y$
  - C.  $X \geq Y$
  - D. None of the above
  
3. Which of the following variable names is *invalid*?
  - A. Final\_Payment
  - B. 1<sup>st</sup> Month
  - C. BirthDate
  - D. Iphone10
  
4. Which of the choice below is equivalent to the following decision :
 

```

      If x > 20 Then
        If y <= 30 Then
          Display x
        End-if
      End-if
      
```

  - A. If  $x > 20$  or  $y \leq 30$  Then Display x
  - B. If  $x > 20$  or  $y \leq x$  Then Display x
  - C. If  $x > 20$  and  $y \leq 30$  Then Display x
  - D. If  $x > 20$  and  $y \leq x$  Then display x

5. Determine the output for the following algorithm :

```

Loop : counter = 0 to 4 step 1
      num = counter * 2
Loop-end : x
Display num * 4

```

- A. 8
- B. 0 2 4 6 8 32
- C. 2 4 6 8
- D. 32

6. Solution that cannot reach through set of steps for problem that require knowledge, experience and process of trial an error is called \_\_\_\_\_.

- A. Algorithm solution
- B. Infinity solution
- C. Heuristic solution
- D. Final solution.

7. What is the final value of X?

```

x = -2
x = -3 + x * 2
x = x - 4

```

- A. -14
- B. -11
- C. -10
- D. -7

8. What is the final value of Z after executing the following algorithm?

```

x = 2
y = 5
z = 0
Case of x * y
  = 2: Z = Z + 1
  = 5: Z = Z + 2
  = 7: Z = Z + 3
  OTHERWISE: Display "Done"
End-of-Case

```

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

9. Which of the following statement is valid for the logical expression given below ?

```
result= X OR Y AND NOT Z
```

- A. If Z is True, the result always True regardless the value of X and Y
- B. If Z is False, the result is False regardless the value of X and Y
- C. If X and Z is True, the result is True regardless the value of Y
- D. If X and Z is False, the result is False regardless the value of Y

10. A (n) \_\_\_\_\_ provides a graphical representation of an algorithm.

- A. IPO Chart
- B. Problem Analysis Chart
- C. Structure Chart
- D. Flowchart

11. What is the final value of X?

```
X = 20
WHILE X >= 5
    DISPLAY X
    X = X - 3
WHILE-END
```

- A. 2
- B. 3
- C. 5
- D. 8

12. The following are the characteristics of local variable **except** \_\_\_\_\_.

- A. Their values can be used and changed by any module in the program anytime.
- B. They are declared in a module.
- C. The variables will be deleted from computer memory when its module ends.
- D. Their variable name can be the same as other local variables in different modules.

13. Assume user input is 10, what is the output for the following?

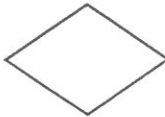
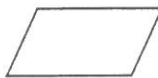
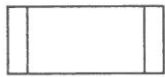
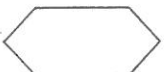
```

Read power
IF power > 10 THEN
  DISPLAY "Enough"
ELSE IF X < 10 THEN
  DISPLAY "More power required"
ELSE
  DISPLAY "Just right"
END-IF

```

- A. 10
- B. Enough
- C. More power required
- D. Just right

14. Which of the following symbol represents the automatic counter loop?

- A. 
- B. 
- C. 
- D. 

15. Which of the following is(are) valid Computer expression ?

- I.  $A \wedge B$
  - II.  $2A - 2B$
  - III.  $5 \text{ MOD } C$
  - IV.  $(A+B)(C+D)$
- A. I and III only
  - B. II and IV only
  - C. I, II and IV only
  - D. I, II, III and IV

16. What shall be filled in the blank below if the output of the algorithm is 20 22 24 26 28 30 ?

```
X = 20
Repeat
  DISPLAY X
  X = X + 2
until _____
```

- A.  $X \geq 30$
- B.  $X > 30$
- C.  $X < 30$
- D.  $X \leq 30$

17. What is the output for the following algorithm?

```
X = 10
While X < 20
  Case of X
    = 15 : DISPLAY X
    = 20 : DISPLAY X * 2
  End-of-Case
  X = X + 1
While-End
```

- A. 15
- B. 40
- C. 15 20
- D. 15 40

18. \_\_\_\_\_ loop will always execute at least once in the loop body.

- A. While
- B. Repeat /Until
- C. Automatic-counter
- D. All of the above

19. Which of the following is a logical operator ?

- A. AND
- B. MOD
- C. >
- D. +

20. The case logic structure uses the relative operator \_\_\_\_\_ for testing.

- A. Equals
- B. Greater than
- C. Less than
- D. Less than or equal to

**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 the following condition as computer logical expression :

- (i) Z is strictly between 10 and 40 (exclusive 10 but inclusive 40)
- (ii) Both X and Y are odd numbers
- (iii) Tuition Fee is greater than 10000 or subsidy is 20000 and above

(6 marks)

(b) Construct a Truth table for the following logical expression:

A OR NOT B AND C

(8 marks)

(c) Design a solution that will read two integer numbers using an appropriate logic structure. Compute and display the result based on the code entered by user. The code values should be 1, 2 or 3. Present your solution in PAC.

Code	Action
1	Compute the sum of the two numbers
2	Compute the differences between two numbers (first number – second number)
3	Compute the product of two numbers

(6 marks)

**Question 2**

(a) Assume  $A = 10$ ,  $B = 20$  and  $C = 30$ , evaluate by showing the working step for the following equation :

(i)  $X = A - 2 * (B - C)$

(ii)  $X = B \text{ MOD } 7 * (C \setminus 8)$

(iii)  $X = 6 * A - B ^ C$

(6 marks)

(b) Differentiate name of variable and value of variable. Provide an example to support your answer.

(4 marks)

(c) XYZ T-shirt distributor decided to give discount to its customers. The discount is based on the following :

Order quantify (in piece)	Discount
More than 5000	15%
More than 2000	10%
More than 1000	5%

Each T-shirt costs RM10.50. Design a solution that accepts the order quantity, compute the discount amount and total cost of the order after the discount. The solution should display the number of pieces, discount amount and total cost of the ordered. Besides that, the program shall perform data validation. Present your solution in flow chart.

(10 marks)

**Question 3**

(a) List and discuss **TWO (2)** parameter sending methods. (8 marks)

(b) Draw a *coupling diagram* for the following problem:

Write the *collectData* module to read hours worked and hourlyrate for an employee

Write the *computeSalary* module to calculate the salary based on hourlyrate and hours worked

Write the *computeOthers* module to determine the EPF and PCB (for income tax) based on the salary

Write the *displayInfo* module to display all input and computed information.

(8 marks)

(c) Infinite loop is a sequence of instructions in a computer program that repeated endlessly. Design an algorithm that shows how an infinite loop occur using repetition logic. (4 marks)

**Question 4**

(a) Discuss **THREE (3)** differences between while/while-end loop and repeat/until loop. Show example for each. (6 marks)

(b) Design a solution in algorithm to calculate the result of  $1 + 1^2 + 2^2 + 3^2 + \dots + 400^2$  using repetition logic structure. (8 marks)

(c) State the most suitable data type for the following :

- (i) Quantity of pencil ordered
- (ii) Monthly petrol allowance
- (iii) A product name
- (iv) Postal code
- (v) Average height for students in college
- (vi) Contact number( 6 marks)

~THE END~

