FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**January 2021**
Programme	:	Diploma in Information Technology (DITN)
Course	:	**ICT1101: Programme Logic Formulation**
Date of Examination	:	8 March 2021 (Monday)
Time	:	8.00am – 10.30am Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

This section consists of **TWENTY (20)** questions. Answer **ALL** the questions. **Write ALL your answers** in the foolscap papers.

Material permitted :
Non-Programmable Scientific Calculator

Materials provided :
Nil

Examiner(s)	:	**Koo Lee Chun, Yogeswari, Nursyarizan Mohd Akbar**
Chief Moderator	:	Nor Athira Azlan

*This paper consists of **10** printed pages, including the cover page*

DIPLOMA IN INFORMATION TECHNOLOGY PROGRAMME (DITN)
ICT1101: PROGRAM LOGIC FORMULATION
FINAL ALTERNATIVE ASSESSMENT: JANUARY 2021 SESSION

SECTION A: (40 marks)

Instructions: This section consists of **TWENTY (20)** questions. Answer **ALL** the questions. **Write ALL your answers** in the foolscap papers.

1. Which of the following is (are) HIGH LEVEL programming language(s) ?

   I. Machine Language
   II. C++ programming language
   III. Assembly Language
   IV. Java programming language

   A. I and III Only
   B. II and IV Only
   C. I, II, III Only
   D. I, II, III and IV

2. Which of the following mistake will cause syntax error?

   A. Incorrect symbol is used in an assignment.
   B. Incorrect formula used to calculate total sales amount.
   C. Division by zero
   D. None of the above.

3. Which of the following data items shall be assigned to integer data type?

   I. Total cups of bubble tea sold in a charity event
   II. Contact number
   III. Total students participant in a competition
   IV. Cost for a chocolate cake

   A. I and III Only
   B. II and IV Only
   C. I, II, III Only
   D. I, II, III and IV

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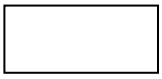
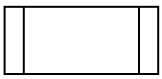
4. Which of the following symbol represents a module in flow chart?

A. 

B. 

C. 

D. 

5. The variable uses to calculate the sum of a range of odd number must be initialized to _____.

A. 0
B. 1
C. Any odd numbers
D. None of the above

6. Which of the following has incorrect sequential logic?

A.
```
Read width, length
area = width * length
Display area
```

B.
```
Enter discount
Display price - discount
```

C.
```
A = 10
B = 20
A = A + 2
B= A + B
Display B
```

D.
```
Y = X + Y
Y = 10
X = 20
Display X, Y
```

7. Assuming `x` is numeric variable. How many times the instruction "`Display x`" is processed?

```
Loop : x = 1 to 5 Step 2
       Display x
Loop-End : x
```

A. 1
B. 2
C. 3
D. 4

8. Consider the instructions given below, what is the final value of x and y after the execution? :

```
BEGIN
   x = 10
   y = 0
   x = x - 2
   y = x + 2
END
```

A. X=8,Y=10
B. X=8, Y=2
C. X=10, Y=10
D. X=10,Y=2

9. In _____ , all conditions are tested.

A. Straight-through logic
B. Positive logic
C. Negative logic
D. None of above

10. A variable known only to the module in which it is declared is called a(n) _____ variable.

A. Global
B. Local
C. Procedure
D. Function

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11. If the input value of X is 0, what is the output for the following algorithm? :

```
ENTER X
CASE OF X+1
   =1 : Display "OUTPUT 1"
   =2 : Display "OUTPUT 2"
   OTHERWISE : Display "OUTPUT 3"
 END OF CASE
```

A. OUTPUT 1
B. OUTPUT 2
C. OUTPUT 3
D. Nothing is displayed

12. What is the final value of X and Y for the following algorithm?:

```
X=20
Y=5

IF X < 5 THEN
   Y = X + Y
ELSE IF X <= 20 THEN
   Y = X - Y
ELSE
   X = X + 1
END-IF
```

A. X=20 Y=15
B. X=20 Y=25
C. X=21 Y=15
D. X=21 Y=25

13. Instruction in _____ logic will always execute at least once.

A. While
B. Repeat until
C. Automatic Counter
D. None of the above.

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14. Which of the following is NOT a logical operator?

A. AND
B. OR
C. NOT
D. MOD

15. Which of the following statement is VALID?

A. Case logic structure is more complex than If/else statements
B. All the if/else statements can be rewritten in case logic structure
C. All the case logic structures can be rewritten in if/else statements
D. Case logic structure is suitable when repetition of a set of task is required.

16. What does the following algorithm prints?

```
X = 20
WHILE X > 10
     X = X - 3
     DISPLAY X
WHILE-END
```

A. 20 17 14 11 8
B. 20 17 14 11
C. 17 14 11 8
D. 17 14 11

17. In an algorithm containing multiple decisions, you may have to write _____.

I. WHILE-END Loop instructions
II. Nested IF instructions
III. REPEAT-UNTIL Loop instructions
IV. Case logic instruction

A. I and III Only
B. II and IV Only
C. I, II, III Only
D. I, II, III and IV

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18. Which of the following statement is **TRUE?**

    I. An interpreter scans an instruction. Then, translates and executes the instruction immediately.
    II. The native language of a computer is machine language.
    III. A constant value cannot be changed once the value is set.
    IV. The program with logic error cannot be compiled and executed.

    A. I and III Only
    B. II and IV Only
    C. I, II, III Only
    D. I, II, III and IV

19. Which of the following shows the **CORRECT** sequence of the organizational tools that a programmer may use to solve a problem?

    A. Flowchart, Structure Chart, IPO, PAC, Algorithms
    B. Algorithms, PAC, IPO, Structure Chart, Flowchart
    C. IPO, Structure Chart, PAC, Algorithm, Flowchart
    D. PAC, Structure Chart, IPO, Algorithm, Flowchart

20. What shall be fill in blank for the following algorithm to produce output : 2 4 6 8?

```
X = 2
REPEAT
        DISPLAY X
        X = X + 2
UNTIL __________
```

    A. X < 0
    B. X > 0
    C. X < 8
    D. X > 8

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SECTION B: (60 marks)

Instructions: This section consists of **THREE (3)** questions. Answer **ALL** the questions. **Write your answers** in the foolscap papers.

Question 1

(a) Given `x = 1, y =2, z =3`. Solve the following arithmetic expressions. Show the working steps for each of your answer.

i. `x + y * z`
ii. `x + y - z mod y`
iii. `x >= y and y < > z`
iv. `x - 1 <= 0 or y - z > 0`

(8 marks)

(b) State the **MOST SUITABLE** logic structure to solve each of the following problem.:

i. Calculate and display the area of a rectangle
ii. Calculate the sum and average of monthly spending.
iii. Determine the total discounted amount a customer is entitled to. A customer is entitled for 15% discount with total spending of more than RM 200, otherwise 10% discount is given.
iv. Display a list of alphabet letters from 'A' to 'Z'.
v. Assign final grade ('A', 'B', 'C', 'D' or 'F') based on the total marks for ICT1101.

(5 marks)

(c) Design a program that reads the total time spend to complete ~~a~~ task in minute and convert the time spent to hour and minute. Present your answer in PAC.
Note: 1 hour = 60 minutes

Example:
```
Enter total time spend (in minutes): 320
You had spent 5 hours and 20 minutes
```

(7 marks)

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Question 2

(a) Assume A, B, C and D are variables. Rewrite the following mathematical expressions in computer understandable format:

i. $D = \frac{2A-3B}{C+10}$

ii. $D = A^3 - 4\ (B - C)$

(4 marks)

(b) Present the following algorithm in a flow chart:

```
Start
     Enter x, y
     if x > y then
          while x <> y
               x = x - y
          while-end
     else
          display "Good luck"
     end-if
End
```

(7 marks)

(c) Write an algorithm for a food delivery system that allows the user to input the total order amount and distance (in km) from the restaurant. Then, the program shall calculate and display the total payment of the order. The total payment is the sum of the order amount and the delivery fees. The delivery fees are charged based on the following table. :

Distance	**Charges**
Less than 5 km	RM 8
5km to 10km	RM 2.00 per km
More than 10km	RM 2.50 per km

(9 marks)

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Question 3

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

```
A AND B OR NOT B
```

(4 marks)

(b) Use the repetition logic, design a solution in algorithm that calculates the average of all the even numbers between two integer values entered by the user.

(7 marks)

(c) Design a coupling diagram for Payroll program based on the following module requirements.:

Modules	**Description**
inputData	This module reads in hours work and pay rate for an employee.
calcGrossSalary	This modules calculates the gross salary. Gross salary = hours * pay rate.
calcOthers	This module calculates the monthly tax reduction, EPF contribution based on the gross salary produced by calcGrossSalary module. The, the module calculated the net Salary using formula : Net salary = gross salary – monthly tax reduction – EPF
printSlip	This module prints the gross salary, monthly tax reduction, EPF contribution and also net Salary.

(9 marks)

~THE END~