FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**April 2022**
Programme	:	Diploma in Information Technology (DITN) Diploma in Mechanical Engineering (DMEN)
Course	:	**ICT1101: Programme Logic Formulation**
Date of Examination	:	August 5,2022 (Friday)
Time	:	8.00am – 10.30am Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

Note: 30 minutes is added into the duration of the examination to factor in any connectivity matters and for you to scan and upload your scripts.

Answer **ALL** questions in **Section A** and **Section B. Write ALL your answers** in the foolscap papers.

Material permitted :
Non-Programmable Scientific Calculator

Materials provided :
Nil

Examiner(s)	:	**Ms Shee Fui Chie** and Ms Siti Syakirah Sazali
Chief Moderator	:	Mr Koo Lee Chun

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

DIPLOMA IN INFORMATION TECHNOLOGY PROGRAMME (DITN)
DIPLOMA IN MECHANICAL ENGINEERING PROGRAMME (DMEN)
ICT1101: PROGRAM LOGIC FORMULATION
FINAL ALTERNATIVE ASSESSMENT: APRIL 2022 SESSION

Instruction: This paper consists of **TWO (2)** sections. Answer **ALL** questions in **SECTION A** and **SECTION B**.

SECTION A (50 marks)
Instructions: This section consists of **TWENTY-FIVE (25)** questions. Answer **ALL** questions. All questions carry equal marks. Select best possible answer.

1. A(n) _____ translates each high-level languages' statement into machine language and executes it immediately before the next statement is examined.

   A. interpreter
   B. compiler
   C. translator
   D. All of the above

2. A programming language is a set of instructions consisting of _____.

   A. syntax
   B. numerical and logical operators
   C. utility functions
   D. All of the above

3. For the following Boolean expression, which operator will be evaluated first?

   If Mark >=50 OR mark <70 AND mark <=100

   A. AND
   B. OR
   C. >=
   D. <

4. Which of the following is determine whether `price` is in the range of 30 through100 (Inclusive)?

   A. If price >30 and price <100
   B. If 30 < price or price >100
   C. If 30 > price and price <100
   D. If price > 30 or price < 100

5. Following data items can be assigned to numeric data type **EXCEPT** _____.

   A. telephone number
   B. number of students
   C. quantity of pencils
   D. school fees

6. Which of the following is the statistical function?

   A. AVERAGE
   B. SQRT
   C. INTEGER
   D. RANDOM

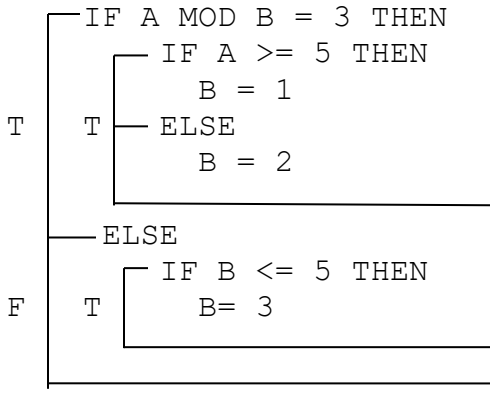
7. Which of the following shows the **CORRECT** sequence of the organizational tools that a programmer may use to solve a problem?

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

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

   A. Functions are small sets of instructions that perform specific tasks and return values.
   B. Value of a constant can be changed once it has been set, value of a variable cannot be changed once it has been set.
   C. Assembly language is the native tongue of a particular computer.
   D. Cohesion allows modules to be connected by an interface, which enables the programmer to transfer data from one module to another.

9. In the following algorithm, what value is assigned to B if A = 12 and B = 5?



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

10. _____ are local variables that are send from one module to another and it allows communication between the involved modules.

A. Parameters
B. Passing variables
C. Lists
D. Module variables

11. Following are the four basic parts of a decision table **EXCEPT** _____.

A. counters
B. conditions
C. the combination of TRUE and FALSE for the condition
D. the action to be taken or consequences for each combination of conditions

12. Consider the following algorithm:

```
  Y= 1
┌─LOOP: X = 1 TO 10 STEP 2
│          Y= Y + X;
└─LOOP-END: X
```

What is the final value of Y for the above algorithm?

A. 1
B. 5
C. 10
D. 26

13. Modules are couple with _____.

I. global variables
II. module name
III. parameters

A. I, II, II
B. I only
C. I, II only
D. II, III only

14. Which of the following expression suitable to determine a number is odd value?

A. If number MOD 2 < > 0
B. If number – 2 < >0
C. If number \ 2 < > 0
D. If number / 2 < > 0

15. Consider the following algorithm:

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

Which of the following statements is **TRUE**?

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

16. Which of the following instruction(s) **DO(ES) NO**T change the value of X ?

I. Y = X + 1
II. X = X + Y
III. Y = SQRT (X)

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

17. Which of the following is constant?

    A. The number of square feet in a room that is 12 ft. by 12 ft.
    B. The temperature outside your house
    C. The noise level at a concert.
    D. The price of a dozen donuts is from RM2.50 to RM3.00

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

    A. *, +, >=, NOT
    B. ( ),<, MOD,+, -
    C. >=, AND, *, /
    D. OR, *, / , + , < >

19. Below is a flowchart symbol of _____.

    A. Processing Module
    B. Processing
    C. Decision
    D. End/Exit

20. Which of the following chart does **NOT** include the module components?

    A. Problem Analysis Chart
    B. IPO Chart
    C. Algorithm
    D. Flowchart

21. The following items are identified in data dictionary *except* _____.

    A. The item number
    B. The variable names
    C. The related module names
    D. The module reference numbers

22. Which of the following logic structure tells computer to process a set of instructions in order from top to bottom of an algorithm?

    A. Sequential logic structure
    B. Decision logic structure
    C. Loop logic structure
    D. Case logic structure

23. A program to calculate the total of n input numbers can be best solved using _____.

    A. Loop Logic Structure
    B. Sequential Logic Structure
    C. Decision Logic Structure
    D. Case Logic Structure

24. A loop within a loop, an inner loop within the body of an outer one is called _____.

    A. Nested loop
    B. Pre-condition loop
    C. Post-condition loop
    D. Automatic-counter loop

25. What three parts of a counting loop must be coordinated in order for the loop to work properly?

    A. initializing the counter, testing the counter, changing the counter
    B. initializing the condition, changing the condition, terminating the loop
    C. the while, the assignment, and the loop body
    D. the while statement, the if statement, and sequential execution

SECTION B (50 marks)

Instructions: This paper consists of **TWO (2)** questions. Answer **ALL** questions.

Question 1

(a) Design a solution in the form of **problem analysis chart (PAC)** to the program that reads in a number of cents and write out the number of dollars and cents.

Sample input and output:

```
Input the cents: 324
That is 3 dollars and 24 cents.
```

(10 marks)

(b) Write an **algorithm** of a passenger-recording program that will request user for number of passenger for KTM, number of passenger for LRT, and number of passenger for bus in Klang valley. Calculate and display the total and average of passengers for the public transports. (8 marks)

(c) Draw a **flowchart** to calculate and display the total amount of Sushi taken by **TEN (10)** customers in a **loop logic structure**. (Each Sushi is RM3.50)

Sample input and output:

```
Number Sushi for customer 1: 3
Number Sushi for customer 2: 5
Number Sushi for customer 3: 1
Number Sushi for customer 4: 4
Number Sushi for customer 5: 1
Number Sushi for customer 6: 3
Number Sushi for customer 7: 2
Number Sushi for customer 8: 10
Number Sushi for customer 9: 4
Number Sushi for customer 10: 5
Total amount of 10 customer: RM 133.00
```

(12 marks)

[Total 30 marks]

Question 2

Design a program that calculates and prints a cellular telephone bill. The cellular company offers two types of service: regular and premium. Their rates are vary and depending on the type of service. The charges are computed as follows:

Type of Service	Charges
Premium (P)	RM25.00 plus : RM0.20 per minutes for first 50 minutes. RM0.10 per minutes for subsequent minutes.
Regular (R)	RM15.00 plus : RM0.10 per minutes for first 75 minutes. RM0.05 per minutes for subsequent minutes.

Sample run 1:

```
Enter service type (R or P): a
Invalid service type!
```

Sample run 2:

```
Enter service type (R or P): R
Enter total minutes: 200
Total charges RM40.00
```

Present your solution in **algorithm** for the following tasks:

(a) Identify the **FOUR (4)** equations to calculate the charges. (4 marks)

(b) Prompt user to enter a service type (case sensitive). Apply case logic structure to determine and display the service type. For invalid service type entered, display an appropriate error message. (7 marks)

Sample run:

```
Enter service type (R or P): a
Invalid service type!
```

(c) Prompt user to enter minutes. Use multiple if logic structure to validate minutes. For invalid minutes entered, display an appropriate error message.

Sample run:

```
Enter total minutes: -1000
Invalid minutes!
```

(9 marks)
[Total 20 marks]

-THE END-