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**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2022/2023**

- COURSE NAME** : **COMPUTER ALGORITHM**
- COURSE CODE** : **DAT 13303**
- PROGRAMME CODE** : **DAT**
- EXAMINATION DATE** : **FEBRUARY 2023**
- DURATION** : **3 HOURS**
- INSTRUCTIONS** :
- 1. ANSWER ALL QUESTIONS**
  - 2. THIS FINAL EXAMINATION IS CONDUCTED VIA CLOSED BOOK.**
  - 3. STUDENTS ARE PROHIBITED TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK**

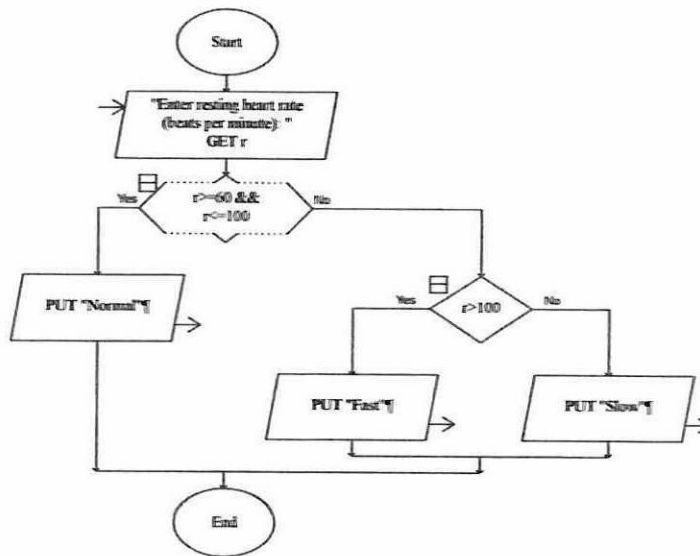
**THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES**

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**TERBUKA**

- Q1** List the steps in program development cycle in chronological order. (7 marks)
- Q2** Differentiate between pseudocode and flowchart in terms of representation type and notation. (4 marks)
- Q3** (a) Infer the data type of the following: (4 marks)
- (i) Telephone number
  - (ii) Grade of a subject
  - (iii) Total salary
  - (iv) Total votes
- (b) Classify the following into a constant or a variable. (4 marks)
- (i) Speed of light
  - (ii) Temperature
  - (iii) Circumference
  - (iv) Acceleration of gravity
- (c) Classify the following into the correct type of statement. (3 marks)
- (i) Set i to 0
  - (ii) Get cgpa
  - (iii) Display name
- (d) Identify the type of operator(s) in the following statements. (4 marks)
- (i)  $a += b$
  - (ii) if ( $c > d$  AND  $c > e$ ) then
- (e) Arrange the following according to the order of precedence. (5 marks)
- (i) -
  - (ii) ( )
  - (iii) %
  - (iv) ^
  - (v) \*

Q4 Convert the following flowchart to pseudocode.



(5 marks)

Q5 Draw the flowchart for a program that displays the result of a blood sugar test after fasting based on the table below.

Result	Fasting Blood Sugar Test
Diabetes	126 mg/dL or above
Prediabetes	100-125 mg/dL
Normal	99 mg/dL or below

(6 marks)

Q6 Given the following pseudocode for a program that calculates the factorial of a number.

```

start
1. factorial = 1
2. read n
3. for (number = 1; number ≤ n; number ++)
4. factorial = factorial * number
next
5. display factorial
end
    
```

Draw a tracing table to find the factorial of 2 based on the above pseudocode.

(11 marks)

Q7 Assume an array that stores 50 hepatitis patients' type of hepatitis; A, B, C, D, or E. Write the pseudocode for a program that displays the number of patients for each type.

(16 marks)

Q8 Given the following information.

Blood Pressure Category	Systolic Blood Pressure		Diastolic Blood Pressure
Normal	<120 mmHg	and	<80 mmHg
Elevated	120-129 mmHg	and	<80 mmHg
Hypertension Stage 1	130-139 mmHg	or	80-89 mmHg
Hypertension Stage 2	≥140 mmHg	or	≥90 mmHg

Write the pseudocode for a program based on the table above using the following modules. The program stops when there is no more data to enter. Perform input validations.

- (a) Module level ()
  - (i) Receives systolic and diastolic blood pressure.
  - (ii) Determines and displays the category of blood pressure.
  - (iii) Counts the number of people for each category.
- (b) Module summary ()
  - (i) Displays the number of people for each category.
- (c) Main module ()
  - (i) Get systolic and diastolic blood pressure from the user.
  - (ii) Calls module level ().
  - (iii) Calls module summary ().

(31 marks)

-END OF QUESTIONS -