UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2023/2024

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COURSE NAME	:	COMPUTER ALGORITHM
COURSE CODE	:	DAT 13303
PROGRAMME CODE	:	DAT
EXAMINATION DATE	:	JANUARY / FEBRUARY 2024
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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Q1   Explain the first **THREE (3)** phases in the program development cycle with examples.

(9 marks)

Q2   Differentiate between pseudocode and flowchart in terms of representation type and notation.

(4 marks)

Q3   (a)   Identify the data type of the following:

(i)   Student matric number
(ii)   Grade of a subject
(iii) Total average of prices
(iv)   Total student in a group

(4 marks)

(b)   Classify the following into a constant or a variable.

(i)   Air Pressure
(ii)   Pi
(iii) Humidity
(iv)   Velocity of light in free space

(4 marks)

(c)   Classify the following into the correct type of statement.
(i)   `Set i to 40`
(ii)   `Get total`
(iii) `Display "current salary", salary`

(3 marks)

(d)   Identify the type of operator(s) in the following statements.
(i)   `x /= y`
(ii)   `if (x > y AND x >= z) then`

(4 marks)

(e)   Arrange the following according to the order of precedence.

(i)   + ...
(ii)   ( )   ....
(iii) %   ....
(iv)   ^   ....

(4 marks)

Q4   Convert the following flowchart to pseudocode.
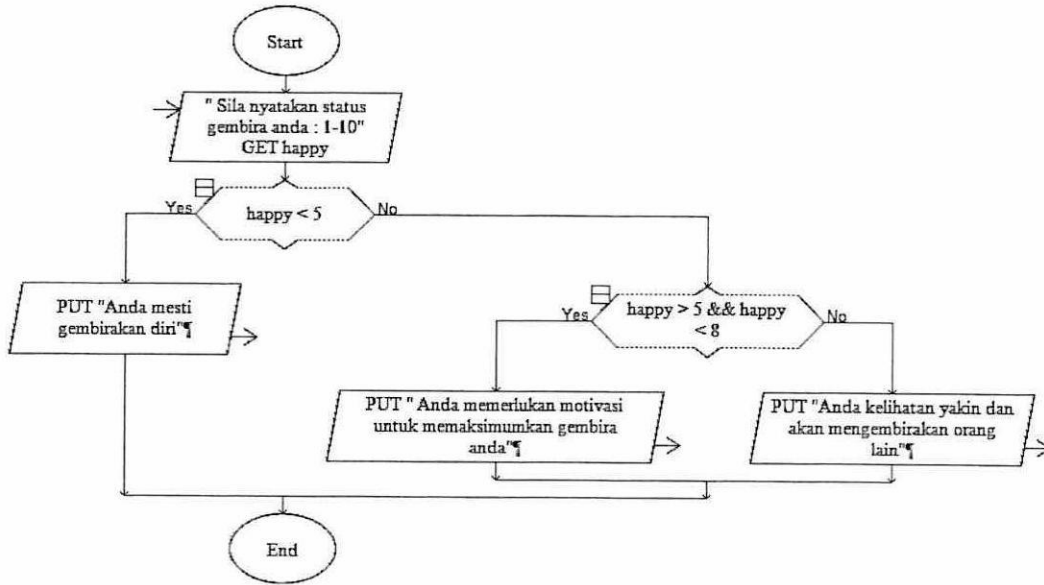
(5 marks)

Q5   Draw the flowchart for a program that displays the result of criteria smoker test based on the table below.

Criteria	per day and duration (in years)
Nonsmoker	0
Light smoker	1 - 100
Moderate smoker	101 - 200
Heavy smoker	>200

(6 marks)

Q6   Draw a tracing table to find the output based on the pseudocode given.

```
start
   Declare myNumbers[5] = {1, 11, 22, 33, 44};
   for (int i = 0; i < 5; i++)
   { if(myNumbers[i] % 2 = 0) then
       Display "My number " , myNumbers[i]
    Elseif (myNumbers[i] % 2 = 1) then
       Display "Your number " , myNumbers[i]
    Else
    Display "Error"
    Endif
    }
end
```

(12 marks)

Q7   Assume an array that stores 100 patients' type of blood; A, B, AB and O. Write the pseudocode for a program that displays the number of patients for each type.

(15 marks)

Q8   Write detail pseudocode for the program of fast lane in a supermarket payment counter using the following modules. The program continuosly calculate the price until total quantity of item reach 10 unit. Perform input validations.

    (a)   Main module ()
        (i)   Identify membership status.
        (ii)   Calls module readInput ().
        (iii)   Calls module calculateDiscount ().

(3 marks)

    (b)   Module calculateDiscount ()
        (i)   Receives membership status and total price for all items.
        (ii)   Determine discounted price based on the following:
            a.   Member – 30% discount
            b.   Non member – 10% discount
        (iii)   Prompt total amount to be paid after discount.

(16.5 marks)

    (c)   Module readInput ()
        (i)   Read item price.
        (ii)   Read item quantity.
        (iii)   Determine total price for all items.
        (iv)   Return total price for all items.

(10.5 marks)

-END OF QUESTIONS –

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