

# DIPLOMA EXAMINATION IN ENGINEERING AND TECHNOLOGY

## PROGRAMMING METHODOLOGY

(Model Question Paper ||)

[ Time : 3 Hours

(Max. Marks : 100)

### PART – A

(Answer all questions. Each question carries 2 marks)

I.

1. Define algorithm
2. Write the output of the following pseudocode  
If  $X=1$  Then  
    Write "Hi"  
End If  
Write "Bye"
3. Write the syntax to define a two dimensional array
4. Determine the value of the following expressions  
(i) Abs (-13.2)  
(ii) Round (11.6)
5. What is meant by scope of a variable?

( 5 x 2 = 10 marks)

### PART – B

(Answer any **FIVE** questions. Each question carries 6 marks)

II.

1. List the steps in problem solving
2. The pseudocode to calculate the average of 2 numbers is given below. Rearrange the statements to correct the algorithm.

```
Input num1, num2
Declare num1, num2, avg as float
Write "Enter the two numbers"
Write avg
Set avg=(num1 + num2 )/2
Write "The average of two numbers is "
```

3. Write short notes on sentinel controlled loops
4. Explain the structure of for loops with example
5. Write short notes on multi-dimensional arrays
6. The marks of 50 students is stored in the array, MARKS. Write the pseudocode to find the highest marks from the array.
7. Write the pseudocode to calculate the power of a number  $X^Y$  using recursion.

**( 5 x 6 = 30 marks)**

### PART – C

(Answer one full question from each unit. Each question carries 15 marks)

#### UNIT - I

- III. a. Write an algorithm to check whether the given number is odd or even. Draw the flowchart for this program. **(10)**
- b. Describe the hierarchy of arithmetic and logic operations **(5)**

OR

- IV. a. Describe the different types of errors in programming **(6)**
  - b. Write an algorithm and flowchart to calculate the area of the triangle. The three sides of the triangle is given as the input.
- [ Hint : Area =  $\sqrt{s(s-a)(s-b)(s-c)}$        $s = \frac{(a+b+c)}{2}$  ] **(9)**

#### UNIT - II

- V. a. Explain the structure of CASE statement with the help of flowchart. **(7)**
- b. Write a menu driven program that inputs two numbers and then find the sum, difference, product or quotient. **(8)**

OR

- VI. a. Explain defensive programming **(6)**
- b. For a list of numbers entered by the user and terminated by 0, find the sum of the positive numbers and the sum of the negative numbers **(9)**

#### UNIT - III

- VII. a. Differentiate between arguments and parameters **(6)**
- b. Write the pseudocode to find the largest element in the matrix. **(9)**

OR

- VIII. a. Explain linear search technique with a suitable example (6)  
b. The transpose of  $m$  by  $n$  matrix is defined to be an  $n$  by  $m$  matrix that results from interchanging the rows and columns of the matrix. Write a program to find the transpose of a matrix (9)

**UNIT - IV**

- IX. a. What is recursion? Explain the advantages of recursion (7)  
b. The marks for 3 subjects of a student is given. You are asked to calculate the average and total marks. Use subprogram to input 3 marks, function to calculate the total marks and average, subprogram to display the result. (8)

**OR**

- X. a. Write the steps to insert and modify record in a sequential file (7)  
b. Write the pseudocode to find the factorial of a given number using recursion (8)

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