TED (10)–1018 Reg. No. .....

(REVISION—2010) Signature .....

SECOND/THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—OCTOBER, 2013

PROGRAMMING METHODOLOGY

(For III Semester CB and for II Semester all branches except CP and CB)

[*Time* : 3 hours

(Maximum marks : 100)

Marks

PART—A

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define an algorithm.
2. Evaluate the expression : (20/5) + (5*(4–3))%2.
3. How many interchanges take place in sorting the numbers 4, 3, 2 in ascending order using a bubble sort ?
4. Name the different types of files.
5. What is meant by scope of a variable ? (5x2=10)

PART—B

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

II 1. Write equation/expressions for the following statements. (Create your own variable names).

(a) Average of three numbers.

(b) Salary is greater than or equal to 10,000 and less than 25,000.

(c) Score is greater than or equal to 10 or less than 15.

2. The statements in the following algorithm is not in correct order. Rearrange the statements to correct the algorithm.

```
Input l, b
Declare l, b, A as float
Write "Enter the length and breadth"
Write A
Set A = l*b
Write "The area is".
```

3. Differentiate between pre-test and post-test loop structures with examples for each.

Marks

4. Write the pseudocode to count the number of positive numbers, negative numbers and zeros from an array of 'n' numbers.

5. Write short notes on subprograms.

6. Write a program segment to find the smallest number in an array.

7. Answer questions from 'a' to 'c' based on the following algorithm. (Assume that the variables in the main program are global).

```
Main
    int x, y
    x = 2
    y = 6
    call display (5*x, y, 5)
end program
subprogram display (int N1, int N2, int N3)
    x = N1* N2 + N3
    write x
end subprogram.
```

(a) What are the values passed from the main program to the sub program ?

(b) List the local and global variables.

(c) What is the output for this pseudocode ? (5×6=30)

PART—C

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

Unit – I

III (a) Mention the advantages and disadvantages of using pseudocodes. 6

(b) The surface area of a closed cylinder is calculated using the formula

Surface area = $2\pi r^2 + 2\pi rh$

Write the flow chart and algorithm to solve the equation by entering the radius (r) and height (h). (Given : $\pi = 3.14$). 9

Or

IV (a) Discuss various flow chart symbols. 6

(b) Write a program that computes and displays the batting average for a cricket player when the user inputs the number of runs and overs for that player. (Hint : batting average is computed by dividing the number of runs by the number of overs). 6

Marks

(c) Write whether the following is true or false :

(i) "Jacob" < "Jacob"

(ii) "Sugar" == "SUGAR"

(iii) "???" > "??". 3

UNIT – II

V (a) Explain dual and multiple alternative structures using flow chart. 6

(b) Develop a menu-driven program that inputs two numbers and at the user's option find their sum, difference, product or quotient. 9

OR

VI (a) Explain defensive programming. 6

(b) Find the sum of squares of the integers from 1 to N, where N is the input by the user. 9

UNIT – III

VII (a) Write a program segment to input the test scores of 50 students and then display them in descending order. 9

(b) Differentiate between arguments and parameters. 6

OR

VIII (a) Write a program segment to find the sum of two arrays. (hint: Use 2D array) 10

(b) Describe the concept of multi-dimensional arrays. 5

UNIT – IV

IX (a) What are the modes of parameter passing ? 6

(b) Design an algorithm to find the area of a square. Use a sub program to input the side of the square, use function to calculate the area and a subprogram to display the result. 9

OR

X (a) What is recursion ? Explain with a suitable example. 6

(b) Write a program to find the Nth power, X^N, of number X using recursive function. 9