

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

PROGRAMMING METHODOLOGY

(For IIIrd semester CB and for IInd semester all branches except CP and CB)

[Time : 3 hours

(Maximum marks : 100)

PART—A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. In $C=10*A/2+B$; which operation will be performed first ?
2. What will be the output of the following code ?

```
int x = 10,y = 15;
x = x++;
y = ++y;
printf(“%d,%d”,x,y);
```
3. Two arrays of the same size in which elements with the same subscript are related, are called
4. State whether the following statements are true or false :
 (a) Subprogram must always return a value to the program or subprogram that calls it.
 (b) The body of a post-test loop is always executed at least once.
5. Define a sequential file. (5×2=10)

PART—B

(Maximum marks : 30)

II Answer *any five* of the following. Each question carries 6 marks.

1. Write a pseudocode that input cost price and selling price of an item and display whether the salesman made profit or incurred loss.
2. If the marks obtained by a student in five different subjects are input through keyboard, write an algorithm to find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks for each subject is 100.
3. Draw flow charts corresponding to pre-test loops and post-test loops.

4. If Number =7, what will be displayed the following pseudocode is run ?
 For (Count =5; Count<=Number ; Count++)
 Write Count, Count*2
 End for
5. Explain the scope of a variable.
6. Write a pseudocode to count the number of odd numbers in an array.
7. If the lengths of the sides of a triangle are denoted by a, b and c then the area of triangle is given by :

$$\text{Area} = \sqrt{S(S-a)(S-b)(S-c)}$$
 Where, $S=(a+b+c)/2$. Write a sub program to calculate the area of the triangle.
 (5×6=30)

PART—C

(Maximum marks : 60)

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

UNIT—I

- III (a) A company insures its drivers in the following cases :
 If the driver is male and above 30 years of age
 If the driver is female and above 25 years of age.
 In all other cases, the driver is not insured. If sex and age of the driver are inputs, write a pseudocode to determine whether the driver is insured or not. 9
- (b) List and explain the two fundamental types of errors that can arise in coding a program. 6

OR

- IV (a) A program is required to accept two integers A and B. If the value of A is greater than that of B, the numbers are added, otherwise the value of A is subtracted from B :
 (i) Write pseudocode for your solution.
 (ii) Draw a flow chart to solve the above problem. 9
- (b) What is the use of the following documents ?
 (i) Trade study documentation.
 (ii) User's guide. 6

UNIT—II

- V (a) Write a pseudocode to input the number 'N' between 1 and 7 and displays the day of the week such as "Sunday" if N=1, "Monday" if N=2 "Saturday" if N=7. If the input number is not between 1 and 7 then display "Invalid Number". Implement using :
 (i) A Sequence of If-then statements.
 (ii) A case statement. 10
- (b) Differentiate break, continue statements with example. 5

OR

- VI (a) Any character is entered through the keyboard, write a pseudocode to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

The following table shows the range of ASCII values for various characters.

| <i>Characters</i> | <i>ASCII values</i> |
|-------------------|-----------------------------|
| A-Z | 65-90 |
| a-z | 97-122 |
| 0-9 | 48-57 |
| Special symbols | 0-47, 58-64, 91-96, 123-127 |

- (b) Explain the hierarchy of operators. 5

UNIT—III

- VII (a) 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. 8
- (b) Write an algorithm to find length of a string stored in an array. 7

OR

- VIII (a) Write a program to find transpose of a ' $m \times n$ ' matrix. The transpose of a ' $m \times n$ ' matrix is a ' $n \times m$ ' matrix that results from interchanging the rows and columns of the matrix. 8
- (b) Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another without using power function. [if the input is X & Y, calculate X^Y]. 7

UNIT—IV

- IX (a) Write a program that utilises two functions RECT_AREA and RECT_PERIMETER to compute the area and perimeter of a rectangle respectively. Input of the rectangular sides as well as the outputs of the area and perimeter should be done inside the main () function. (Area = length *width, Perimeter = 2*(length+width). 9
- (b) Write the different steps to create a sequential file. 6

OR

- X (a) A 5 digit number is entered through keyboard. Write a function to print the reverse of it. 8
- [If the input number is '12345' print '54321']
- (b) Explain the different parameter passing methods with example. 7