53 (CS 101) INCP

2014

INTRODUCTION TO COMPUTER PROGRAMMING

Paper : CS 101

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Write in details about the operators available in C language. 10

   (b) Write a program to read an array of size 100. Take another input of a number from the user and search if the number exists in the array. If yes, count the no. of times the number occurred in the array. 10

2. *(a)* Using a program, explain how pointer variables can be used to access strings. 5

(b) Is it possible to create an array of structure ? Explain with the help of an example. 5

(c) Write the algorithm and draw the flowchart to solve the following series :

$$S = 1 + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \ldots \frac{1}{N!}$$ 10

3. *(a)* How is comma operator useful in a for loop ? Explain with the help of relevant examples. 5

(b) Write a program that displays all the numbers from 110 to 400 that are not divisible by 2 as well as by 3. 10

(c) $y = A + (B \cdot C)$ has been represented using AND and OR gates. Represent it using NAND gates. 5

4. *(a)* Distinguish between the following :

(i) break and continue

(ii) Call by value and call by reference.

5+5=10

(b) Write a program using functions to calculate X to the power of Y, where Y can be either negative or positive. 10

5. (a) Explain the importance of a switch case statement. When will you prefer to work with a switch statement ? Also give its limitations. 5

(b) Find the following : 2·5+2·5=5

(i) decimal equivalent of the octal number $(434)_8$

(ii) binary equivalent of the hexadecimal number $(100{\cdot}F_1)_{16}$

(c) How many types of storage classes does the C language support ? Why do we need different types of such classes ? Give the features of each storage class. 1+3+6=10

6. Write short notes on : 4×5=20

(i) Nested structures

(ii) Two-Dimensional Arrays

(iii) Generation of Computers

(iv) Recursive functions.

7. Define a structure date containing three integers—day, month and year. Write a program using functions to read data, to validate the date entered by the user and then print the date on the screen.

For example, if you enter 29, 2, 2010 then that is an invalid date as 2010 is not a leap year. Similarly 31, 6, 2007 is invalid as June does not has 31 days. 20