(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 199212   Roll No.

B.Tech.

(SEM. II) THEORY EXAMINATION 2013-14

COMPUTER CONCEPTS AND PROGRAMMING IN C

Time : 3 Hours   *Total Marks : 100*

Note :– (i)   This paper is in **three** Sections. Section A carries 20 marks, Section B carries 30 marks and Section C carries 50 marks.

(ii)   Attempt **all** questions. Marks are indicated against each question/part.

(iii)   Assume data where required.

SECTION–A

1.   You are required to answer **all** the parts of this question :

(2×10=20)

(a)   What do you mean by an external storage ? What is the use of it ? Explain.

(b)   What do you mean by formatted output in C language ? Explain with example.

(c)   Illustrate with proper syntax the exit control loops in C language.

(d) If the type of x and y is integer and x = 6 and y = 8, then give the value of x/y and x%y.

(e) What do you understand by unary operations in C language ?

(f) Why binary number system is used in computer system ?

(g) What is a pointer variable ?

(h) Illustrate the use of comma (,) operator in C with proper example.

(i) What do you mean by derived data type ?

(j) What is the role of ALU ? Explain.

SECTION–B

2. Attempt any **three** parts of the following : (10×3=30)

(a) (i) Describe various components of the digital computer with suitable diagram.

(ii) What is an Operating System ? Compare Windows and UNIX operating systems.

(b) What do you mean by Linear Searching ? Write an algorithm and also draw flow chart to search an element in an array of integers and also print its location in the array.

(c) Why functions are used in C language ? Write a function in C to calculate the factorial of a given number. Use that function in a program to find the sum of the factorial of numbers from 1 to 5.

(d) Convert the following :

(i) $(111101.11)_2 = ( )_{10}$

(ii) $(BA1)_{16} = ( )_8$

(iii) $(486.5)_{10} = ( )_2$

(iv) $(507.4)_8 = ( )_2$

(v) $(100101.11)_2 = ( )_{16}$

(e) Write short notes on the following :

(i) Various scope rules in C.

(ii) Stack and its operation.

SECTION–C

3. Attempt any **two** parts of the following : (5×2=10)

(a) What is a flow chart ? Make a flow chart to find the sum of all the odd numbers between 1 and 20.

(b) Write a program in C to print summation of all the diagonal elements of a square matrix of size 3×3.

(c) Write a program in C to find the number of words in a given sentence.

4. Attempt any **two** parts of the following : (5×2=10)

(a) What do you mean by sorting ? Write an algorithm to sort the elements of an array in asecnding order.

(b) Write a short note on pointers and address arithmetic in C language.

(c) Write a program in C to calculate the surface area and the volume of a cube having side of 20 centimeter.

5. Attempt any **two** parts of the following : (5×2=10)

   (a) Compare the switch..case and nested..if statement in C language with suitable example.

   (b) Write a program to add the two square matrixes of size 4×4 and store the result in third square matrix.

   (c) Write a program in C to create the address diary for a colony. Then display the names of all those residents who are in government jobs and are senior citizens.

6. Attempt any **two** parts of the following : (5×2=10)

   (a) Write a program in C to find the sum of all the digits of a given number of at least 4 digits long.

   (b) Write a program in C to create a text file containing the names of the students. Then close it and reopen it to append more names at the end of that file.

   (c) Write a short note on the dynamic memory allocation in C language.

7. Write short notes on any **two** of the following : (5×2=10)

   (a) Top down program development approach.

   (b) Compare compiler, interpreter and loader.

   (c) Various storage classes in C language.