B. Tech.

(Semester-I) Theory Examination, 2012-13

COMPUTER CONCEPTS & PROGRAMMING IN 'C'

Time : 3 Hours]   *[Total Marks : 100*

Note :   Attempt questions from each Section as per instructions.

Section-A

Attempt *all* (short answer type) question parts.

2×10=20

1.   (a)   What is pointer? How many bytes does a pointer? Justify your answer.

(b)   Explain the ternary operators in details with example.

(c)   Write briefly about the user defined functions and standard library functions.

(d)   What are iterative control statements? Explain the difference between while loop and do-while loop.

(e) What are identifiers, variables and constants? Mention the rules to construct an identifier. Give some examples.

(f) What is an array? What are its advantages? Explain declaration, initialization, accessing elements in an array.

(g) List the differences between structure and union.

(h) Write a 'C' program to convert Binary Number to Decimal Number.

(i) Explain different string manipulation functions with examples.

(j) Write the difference between macro and constant.

Section-B

Attempt any *three* question parts.   10×3=30

2. (a) Explain the following operations :

    (i) fseek( )

    (ii) ftell( )

    (iii) ferror( )

    (iv) feof( ).

(b) Explain in detail about 1-Dimensional and 2-Dimensional array declaration, accessing elements, initialization with suitable examples. Write a program to multiply two N×N matrix.

(c) What is Recursion? What are the advantages of recursive function? Which data structure is used to implement recursion? Write a program to calculate factorial of an entered number using recursive function.

(d) What is an expression? Explain the different types of operators in C. Write the precedence of different operators used in C.

(e) Perform the following :

(i) $(D123.AB)_{16} \geq (\ )_{10}$

(ii) $(-76)_8 \geq (\ )_{10}$

(iii) $(AB15)_{16} + (EF5)_{16} \geq (\ )_{10}$

(iv) $(642)_8 \geq (\ )_{10}$.

Section-C

Attempt *all* questions.   10×5=50

3.   Attempt any two parts :   5×2=10

(a) Draw a neat diagram of Digital computer and label it. Explain briefly each part of it.

(b) Explain the structure of a C program with an example to each step.

(c) What is an algorithm? What are the different approaches to design an algorithm? Write an algorithm to find the capital letters in a string.

4. Attempt any two parts : 5×2=10

(a) Write short notes on the following :

(i) Conditional statements

(ii) Bitwise operators

(iii) String handling functions.

(b) What are the different types of storage classes? Explain each with suitable example.

(c) Write C-program for determining whether the given integer at input is perfect number or not. A number is said to be perfect number if the sum of factors is equal to number itself. For example, the factors of 6 are 1, 2, 3 whose sum 1 + 2 + 3 = 6.

5. Attempt any two parts :   5×2=10

    (a) Write the differences between :

        (i) If statement and Switch statement

        (ii) Compiler and Interpreter

        (iii) Logical operator and Relational operator.

    (b) What is the difference between pass by value and pass by pointer? Write a program to swap two number using the concept of pass by value and pass by reference. Explain the difference between the two codes.

    (c) Write a program to find and print all the prime numbers between and entered number n.

6. Write any one part :   10×1=10

    (a) Write a program in C that accepts the Rollno and name of 60 students in a class along with their marks in Physics, Chemistry and Mathematics. Print the roll no. and name of top 10 students in the order of merit. The merit based on the sum of marks obtained in the three subjects.

(b)   What do you mean by dynamic memory allocation? Write a code in C to create and display elements in a linklist.

7.   Attempt any one part :   10×1=10

(a)   Write a program to define a structure named employee having empid, name and designation. Use this structure to store the data in a file named "employee.dat". Once all the records are entered display the employee details stored in a file.

(b)   Write a program to create an integer array of n elements, pass this array as an argument to a function where it is sorted and displayed.