## B.TECH.

## THEORY EXAMINATION (SEM-II) 2016-17

## COMPUTER SYSTEM \& PROGRAMMING IN ' $\mathbf{C}$ ’

Time : 3 Hours
Max. Marks: 70
Note: Be precise in your answer. In case of numerical problem assume data wherever not provided.

## SECTION - A

1. Explain the following:
$7 \times 2=14$
(a) Write differences between Compiler and Interpreter.
(b) Write any three differences between Application software and System software?
(c) Differentiate between structure and union.
(d) In C programming what will be the value of a , if $\mathrm{a}=\mathrm{b} \% \mathrm{c}$, where $\mathrm{b}=-13$ and $\mathrm{c}=5$ ?
(e) Differentiate between static and register storage class in C language.
(f) What is an enumerated data type in C language? Explain.
(g) Explain the memory hierarchy of a computer system.

## SECTION - B

2. Attempt any three of the following questions:
(a) What is an algorithm? Give the characteristics of an algorithm. Write an algorithm for printing table of a given positive integer also draw the flow chart for the same.
(b) Write a program to sum the series $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\ldots \ldots \ldots+\frac{n}{n+1}$
(c) What is recursion? Write a program in C to generate the Fibonacci series using recursion.
(d) Convert the following:
(i) $\quad(478 \mathrm{~A})_{16}=(?)_{10}$
(ii) $\quad(44)_{5}=(?)_{7}$
(iii) $\quad(3142.28)_{10}=(?)_{2}$
(iv) $(11001100.10)_{2}=(?)_{16}$
(v) $\quad(678)_{10}=(?)_{3}$
(e) A company gives insurance to its drivers in the following cases:
(i) If the driver is married.
(ii) If the driver is unmarried, male \& above 30 years of age.
(iii) If the driver is unmarried, female \& above 25 years of age.

In all other cases, the driver is not insured. If the marital status, gender and age of a driver are inputs, write a program to determine whether the driver is to be insured or not.

## SECTION - C

Attempt the following questions:
$7 \times 5=35$
3. Attempt any two of the following:
i. Write a program to add two matrices A and B of real numbers having dimension 3X3 and store the result in another matrix..
ii. Explain call by value and call by reference mechanism for function call using proper example.
4. Attempt any two of the following:
i. What do you mean by pointers? How pointer variables are initialized? Also write a note on pointer arithmetic with proper example in C language.
ii. A five digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed numbers are equal or not.
iii. Write a note on various approaches to problem solving.
5. Attempt any two of the following:
i. Write a program to sort an array of integers in ascending order using bubble sort.
ii. What is an operating system? Discuss its various functions. Also Compare between Linux and Windows OS.
iii. Discuss the various classifications of computer systems.
6. Attempt any two of the following:
i. What do you mean by macro? What are the applications of macros? Explain types of macro with suitable its examples in C language.
ii. Write a program to count the number of characters, spaces and new lines in a text file.
iii. Write a program in C to display the prime numbers between 1 and 100.
7. Attempt any two of the following:
i. Write a program to check whether a given number is Armstrong or not for example: $153=1^{3}+5^{3}+3^{3}$
ii. What do you understand by conditional compilation? Explain it with an example in C language.
iii. What are different data types of operators in C language? Also write a note on operator precedence in C.

