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# **B.TECH.**

# **THEORY EXAMINATION (SEM-II) 2016-17 COMPUTER SYSTEM & PROGRAMMING IN '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:**

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

### **SECTION – B**

#### 2. Attempt any three of the following questions:

- What is an algorithm? Give the characteristics of an algorithm. Write an algorithm for (a) printing table of a given positive integer also draw the flow chart for the same.
- Write a program to sum the series  $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \dots + \frac{n}{n+1}$ **(b)**
- What is recursion? Write a program in C to generate the Fibonacci series using (c) 3. Her. c recursion.
- Convert the following: (**d**)
  - $(478A)_{16} = (?)_{10}$ (i)
  - $(44)_5 = (?)_7$ (ii)
  - $(3142.28)_{10} = (?)_2$ (iii)
  - $(11001100.10)_2 = (?)_{16}$ (iv)
  - $(678)_{10} = (?)_3$ (v)
- **(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:

#### 3. Attempt any two of the following:

- Write a program to add two matrices A and B of real numbers having dimension 3X3 and i. store the result in another matrix..
- ii. Explain call by value and call by reference mechanism for function call using proper example.
- Discuss various functional components of digital computer. <del>iii.</del>

### $7 \ge 5 = 35$

 $7 \ge 2 = 14$ 

 $7 \times 3 = 21$ 



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### 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.