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Reg. No. :

Name :

**Third Semester B.Tech. Degree Examination, December 2015
(2008 Scheme)**

08.302 : PROBLEM SOLVING AND PROGRAMMING IN C (R F)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. List out the advantages and disadvantages of assembly language over machine language.
2. What is meant by documentation ? Why it is necessary to document a program ?
3. Name and describe four basic types of constants in C.
4. Find the value of i, j, k at the end of execution of each of the following statements
int k = 3, i = 4, z = 6;
a) k+= i%j++; b) i*=k=++j + i; c) i +=j++ + ++j;
5. Explain the difference between *break* statements and *continue* statement in C with suitable example.
6. With suitable example explain the concepts scope and extent of an identifier in C program.
7. Write function definition and function call to swap two integers using function and display the result outside the function.
8. What is union ? How it differ from a structure ?
9. Explain the meaning of the following declarations.
a) int*p; b) int (*p)[10]; c) int*p[10]; d) int p(char *a[])
10. Given an integer x that contains an 8 bit unsigned integer, specify the methods available to set x to 0 using bitwise operator. **(10x4= 40 Marks)**



P.T.O.



PART - B

Answer **one** question from **each** Module.

Module - I

11. a) Explain the difference between primary storage and secondary storage devices. Write short note on any one secondary storage device.
- b) Write down an algorithm to evaluate the function.

$$f(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - (-1)^{(2n-1)} \times \frac{x^{(2n-1)}}{(2n-1)!}$$

OR

12. a) Explain about the general problem solving strategies.
- b) What is the need of flow charts ? Specify the symbols used in a flow chart and their purposes. Draw a flow chart to find the sum of odd numbers in a set of numbers.

Module - II

13. a) Explain the difference between the do-while and while control statement in C.
- b) Write a C program to sort a set of numbers using selection sort and search an element from the resulting array using linear search.

OR

14. a) Illustrate the difference in the use of a structure tag and a new type defined by the *typedef* statement with an example. How a structure variable is initialized during declaration ?
- b) Create a structure to store employee data with employee id, name, salary, date of joining (which itself is a structure). It is decided to increase the pay as per the following rule.

Salary \leq Rs. 20,000 : 15% increase

Salary \leq Rs. 50,000 and $>$ 20,000 : 10% increase

Salary $>$ 50,000 : no increase

Write a C program to implement this and print the details of employees with Salary \geq Rs. 35,000



Module – III

15. a) What is meant by dynamic memory allocation ? What are the advantages of dynamic memory allocation ?
- b) Write a C program to multiply two matrices. Memory should be allocated dynamically and use functions with parameters to do the operations.

OR

16. a) What are the steps to be followed to access a file using a C program.
- b) Write a program to read a text file. Remove the words 'a', 'the', and 'an' from the text file and encode the resulting file by adding a positive integer to the ordinal value of each of the character. Accept the name of text file and positive integer as command line argument. **(3×20=60 Marks)**

