



Reg. No. :

Name :

**Third Semester B.Tech. Degree Examination, December 2012
(2008 Scheme)**

08.302 : PROBLEM SOLVING AND PROGRAMMING IN C (RF)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. What are the roles of flow charts and algorithms in problem solving ? Are they related ? Why ? Give examples also.
2. "C programming works on top-down problem solving strategy". Give your opinion, with suitable examples, on the above statement.
3. Compare high level, assembly and machine languages based on :
 - i) time to execute
 - ii) easiness to program
 - iii) memory usage
 - iv) easiness to debug
 - v) portability.
4. What are header files ? What are their uses ? Give an example for user-defined header file.
5. Describe briefly about different operators and expressions in C.
6. Write a C program to print the difference in sum between the first 'N' Fibonacci numbers and the first N even numbers. Show its working for N = 10.
7. Write a C program to change all the vowels in a string to uppercase. Display the new string. Show its working for "abcdef" as input string.
8. Explain formatted and unformatted data files with examples.





9. Show how structures can be passed into a function by reference. Give an example.
10. How are C functions defined ? What are the different ways of defining functions ?
Give proper examples. (10×4=40 Marks)

PART – B

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

Module – I

11. a) Explain how programs written in high level and assembly languages are executed in a digital computer. 8
- b) Show how the debugging techniques “set break points” and “step-by-step execution” can be applied to debug a C program for bubble sorting. 12

OR

12. a) Explain the various primary storage devices associated with a computer. 8
- b) Let a given problem is to find $F(n)$, the n^{th} Fibonacci number. Show how the top-down design strategy can be used to solve this problem. Is this problem an example of “breaking a problem into sub problems” ? Support your answer with valid reasons. 12

Module – II

13. a) Explain how data input and output are handled in C. Give suitable examples. 10
- b) Write a C program to read an $m \times n$ matrix of characters. Change all the diagonal characters into upper cases. Display this new matrix and also the string formed using these uppercase diagonal elements. 10

OR

14. a) Explain the importance of unions in working with bits in C language. Give examples. 8
- b) Write a menu-driven program to find the sum, product and quotient of two complex numbers. Use structures to represent complex numbers. Give examples. 12



Module – III

15. a) Is it possible to pass values to 'main' function in a 'C' program ? Support your answer with valid reasons and examples. 8
- b) Create a C header file containing a function which converts a string to uppercase format. Also write a C program which calls the above function to convert a string read from the user to uppercase. Print both strings and show its working with the string "grub". 12

OR

16. a) Write a C program to implement the following string table that prints the expanded form of shortened notations. All the short forms should be displayed to the user for selection.
- | | | |
|-----|---|-------------------------------------|
| AAI | – | Airports Authority of India |
| WHO | – | World Health Organization |
| CPU | – | Central Processing Unit |
| SAI | – | Sports Authority of India |
| ACM | – | Association of Computing Machinery. |
- 10**
- b) What is the significance of 'return' statements in a 'C' function ? Is it possible for a function to have multiple 'return' statements ? Can a function return multiple values at a single function call ? Explain your answers with suitable examples. 10

