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**Question Paper Code : 97218**

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER 2015/JANUARY 2016

Second Semester

Computer Science and Engineering

CS 6202 – PROGRAMMING AND DATA STRUCTURES – I

(Common to Information Technology)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List any four advantages of pointers.
2. Give the significance of function declaration.
3. Compare Structures and Unions.
4. List the file opening modes in C.
5. Define an abstract type. List out few.
6. What are the advantages of linked lists over arrays?
7. Define Queue.
8. What is double ended queue?
9. Sort the following numbers using bubble sort 10,5,7,11,4,1
10. Define hashing.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Illustrate the various control structures used in C with suitable example. (10)
- (ii) Write a C Program to implement the following string handling functions using functions and pointers. (6)
  - (1) Strlen ()
  - (2) Strcat ()
  - (3) Strcpy ()

Or

- (b) (i) Write a program to print the Fibonacci series using recursion. (6)  
(ii) Write a C Program with functions and pointers to multiply two matrices and return the resultant matrix to the calling function.(10)
12. (a) Define a structure data type named date containing three integer members day, month and year. Develop an interactive modular program to perform the following tasks :
- (i) To read data into structure members by a function. (8)  
(ii) To print the date in the following format : April 15, 2011 by a second function. (8)

Or

- (b) Write a C program to create a file that could store details about five products. Details include product code, product name, cost and number of items available which are provided through keyboard. Get the input as product code and display the details of the product from the file.
13. (a) Illustrate the algorithms to create the singly linked list and perform all the operations on the created list.

Or

- (b) Write a program to add two polynomials using linked list.
14. (a) (i) Write an algorithm to convert the infix expression to postfix expression. (10)  
(ii) Show the simulation using stack for the following expression :  
 $12 + 3 * 14 - (5 * 16) + 7$  (6)

Or

- (b) (i) Write an algorithm to implement the circular queue using arrays. (10)  
(ii) List the applications of queues. (6)
15. (a) (i) Sort the following sequence using quick sort.  
2, 13, 45, 56, 27, 18, 24, 30, 87, 9 (8)  
(ii) Write an algorithm to search a number in a given set of numbers using binary search. (8)

Or

- (b) Explain the open addressing and chaining methods of collision resolution techniques in hashing.