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**Question Paper Code : 27157**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

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. What is recursion? Give example.
2. What will be output of following program?

```
#include<stdio.h>
int main()
{   int i = 3;
    int *j;
    int **k;
    j = &i;
    k = &j;
    printf("%u %u %d ", k, *k, **k);
    return 0;
}
```
3. Write a simple program to read the Numbers from the file and display numbers.
4. Compare structure and union.
5. What is Abstract data type? Give example.
6. What is doubly circularly linked list?
7. What is Stack and Queue?
8. Evaluate the following expression using stack.  
 $562 + *84 / -$
9. What is rehashing?
10. Compare linear search and binary search.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various Conditional and Control statements in C. (10)  
(ii) Write a function, which will take an array as an argument along with another argument-size and based on the passed arguments, it will return average of the numbers passed through the array. (6)

Or

- (b) (i) Write a C program to find sum of two matrix of order 2\*2 using arrays. Get the Elements of matrix from the user. (10)  
(ii) What is a function pointer? With example explain how to use function pointer. (6)
12. (a) (i) Create a structure Complex (data members-real and imag). Write a function to add two complex numbers, which will take 2 complex numbers as arguments and return the complex number. (8)  
(ii) Create a structure employee (data members-Name and salary). Write a function, using array of objects get 5 employees details and display them. (8)

Or

- (b) (i) Write a program to read a file and count the number of characters and lines in it. (8)  
(ii) Give the format and use of the following File Handling operations in C : fopen, fread, fwrite and fseek (8)
13. (a) (i) Write a function to add two Polynomials using linked list. (8)  
(ii) Write a routine to merge given two sorted linked lists. (8)

Or

- (b) What is meant by doubly linked list? Write the functions to perform the following operations in a doubly linked list.  
(i) Insert after a specified node (6)  
(ii) Delete the node at a given position. (5)  
(iii) Display – from the beginning to end. (5)
14. (a) (i) What is a circular queue and double-ended queue? Give suitable examples to differentiate them. (6)  
(ii) Write a routine to implement the Circular queue using array. (10)

Or

- (b) Discuss any two applications of stack with relevant examples. (16)
15. (a) (i) Sort the following sequence using Quick sort algorithm. Choose the pivot as median. (8)  
38 81 22 48 13 69 93 14 45 58 79 72  
(ii) Write a routine for Merge sort. (8)

Or

- (b) Explain the following collision resolution strategies with example.  
(i) Separate chaining (5)  
(ii) Linear probing (5)  
(iii) Quadratic probing. (6)