AS – 254

II Semester B.A./B.Sc. Examination, April/May 2012
(Semester Scheme) (Freshers and Repeaters)
COMPUTER SCIENCE – II
Data Structures and Operating Systems

Time : 3 Hours Max. Marks : 70/60

Instructions : *i)* ***Repeaters*** *have to answer Section* ***A, B*** *and* ***C*** *only. Which carries* ***60*** *marks.*

ii) ***Freshers*** *have to answer Section* ***A, B, C*** *and* ***D***. *Which carries* ***70*** *marks.*

SECTION – A

Answer **any ten** questions : **(10×1=10)**

1. What is data structures ? Give example.
2. List any two advantages of arrays.
3. What is circularly linked list ?
4. Write any two applications of stack.
5. What is a directed graph ?
6. What are necessary condition for applying binary search ?
7. What is swapping ?
8. Define spooling.
9. What is the use of PCB ?
10. What is throughput ?
11. Define thrashing.
12. List any four file operations.

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SECTION – B

Answer **any five** questions : **(5x3=15)**

13. Explain the different operations on non-primitive data structures.

14. Explain the memory representation of two dimensional array.

15. Write an algorithm to traverse a singly linked list.

16. Convert the following infix expression into postfix expression.

    $((A - (B+C))*D) \wedge (E + F)$

17. Explain time sharing operating system.

18. Explain the different states of process.

19. Explain any one page replacement algorithm.

SECTION – C

Answer **any five** questions : **(5x7=35)**

20. a) Explain the memory representation of strings.

    b) Write the linear search algorithm to search an element in an array. **(4+3)**

21. a) Explain doubly Linked List.

    b) Write the algorithm to insert and delete the element in a linear quene. **(3+4)**

22. a) What is recursion ? Write the recursive programm to solve towers of Hanoi problem.

    b) Write the BFS algorithm for Traversal of a graph. **(4+3)**

23. Write a C program for creation of binary search tree and its traversals. 7

24. a) Explain different system calls.

    b) Explain over lays. (5+2)

25. Consider the following set of processes with CPU burst-time.

Process	Arrival Time	CPU burst-time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

Draw Gantt chart for the execution of these process using FCFS and SJF. Also calculate response time and waiting time. 7

26. a) Write short notes on Demand Paging ?

    b) Explain Directory structure. (3+4)

27. Explain any 3 disk scheduling algorithms. 7

SECTION – D

Answer **any one** question : (1×10=10)

28. a) Write a C program for Insertion sort.

    b) Explain different tree traversals with algorithm. (5+5)

29. a) What are operating system services ? Explain.

    b) Write short notes on : (5+5)

    i) File Attributes

    ii) File protection.