Exam Roll No. ....

END TERM EXAMINATION

FIFTH SEMESTER [BCA] DECEMBER-2014

Paper Code: BCA301	**Subject: Operating Systems**
Time : 3 Hours	**Maximum Marks :75**

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit.

Q1 (a) Explain multi programming and multi tasking systems.
    (b) Explain logical versus physical address space.
    (c) List the differences between pre-emptive and non-pre-emptive scheduling.
    (d) Explain bit-interleaved parity organization and block-interleaved parity organization.
    (e) Explain logical and physical file system.   **(5x5=25)**

UNIT-I

Q2 (a) Discuss various types of fragmentation and memory allocation strategies. **(7.5)**
    (b) Explain the concept of thrashing.   **(5)**

Q3 (a) What is Page Replacement? What is its importance? Explain Least Recently Used Replacement Algorithm.   **(7.5)**
    (b) The following reference string (access sequence) is given:-   **(5)**
        {0,7,1,4,3,8,1,4,3,9,1,4,3,2,7,5,6}
        Find the number of page faults for a main memory subsystem that has 4 frames and uses LRU page replacement policy for on demand paging.

UNIT-II

Q4 (a) Consider the following set of processes with length of CPU burst times (given in milliseconds) and arrival times as specified:-

Process	Arrival Time	Burst Time
P1	0	7
P2	1	4
P3	2	8
P4	3	5

Draw Gantt Chart illustrating the execution of these processes using pre-emptive SJF scheduling algorithm. Also, calculate the average waiting time. **(5)**
    (b) Discuss Round Robin Scheduling Algorithm and Priority Scheduling Algorithm.   **(7.5)**

Q5 (a) What is a Semaphore? Describe the Readers-Writers problem.   **(7.5)**
    (b) What is the critical section problem? What are the three requirement that must be satisfied by a good solution to the critical section problem? **(5)**

UNIT-III

Q6 (a) Discuss Banker's Algorithm in detail.   **(7.5)**
    (b) Discussion Resource Allocation Graph Algorithm in detail.   **(5)**

Q7 (a) Discuss various types of disk scheduling techniques.   **(7.5)**
    (b) Explain the concept of buffering.   **(5)**

UNIT-IV

Q8 (a) Explain directory structure of file system.   **(7.5)**
    (b) Discuss general model of file system.   **(5)**

Q9 (a) What are the different approaches to user authentication?   **(5)**
    (b) Explain the various types of threats to system security.   **(7.5)**

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