

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)
