

8. a) Consider the main memory with capacity of 4 page frames. Assume that the pages of a process are referenced in the order as given below:

1, 3, 4, 4, 3, 2, 1, 7, 5, 6, 4, 2, 1, 2.

Which one is better FIFO or LRU and why? 6

- b) Explain Belady's algorithm. 4

- c) Contrast demand paging versus working set model as a page fitch policy. 4

Unit - V

9. a) Contrast centralized and distributed operating system. 7

- b) Explain RPC (Remote Procedure Call) How it is implemented. 7

OR

10. a) What is the difference between a worm and a virus? How do worm spread? How can they be prevented. 7

- b) What are salient features of UNIX. 3

- c) How does UNIX provide file protection? Explain. 4

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Roll No

CS - 502

B.E. V Semester

Examination, December 2013

Operating System

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any one question from each unit.
ii) All questions carry equal marks.

Unit - I

1. a) Discuss multiprogramming versus single user systems in terms of throughput and CPU utilization. 7

- b) Compare and contrast: 7

i) Multi programming batch and time sharing system

ii) Network and distributed operating system.

OR

2. a) What is meant by a system call. How it can be used? How does an application program use these calls during execution? How is all this related to the compilation process. 6

- b) Explain the function of operating system. 4

- c) Explain various steps involved in booting. 4

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Unit - II

3. a) Describe various space allocation strategies with their merits/demerits. 7
- b) Suppose that a disk drive has 5000 cylinders numbered from 0 to 4999. The drive is currently serving a request at cylinder 143 and previous request was at cylinder 125. The queue of pending request in FIFO order is:
86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 starting from the current head position. What is the total distance (in cylinder) that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms.

i) FCFS

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ii) LOOK

OR

4. a) Describe first fit, best fit and worst fit strategies for disk space allocations with their merits and demerits. 7
- b) Explain the concept of block. How does the block size affects the system performance in terms of I/O speeds and disk space utilization. 7

Unit - III

5. a) Assume that the following Jobs are to be executed on one processor.

Job	Execution time	Arrival time	Priority
0	80	0	2
1	25	10	4
2	15	20	3
3	20	30	4
4	45	40	1

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Using shortest job first, priority and shortest remaining time first scheduling. Draw Gantt chart and calculate average waiting and turn around time 7

- b) What are different process scheduling levels? How do they interact with each other. 4
- c) Explain pre emptive scheduling. 3

OR

6. a) Consider the following snapshot of a system

Allocation					Maximum				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P ₀	0	0	1	2	0	0	1	2	1	5	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

Answer the following questions using bankers algorithm

- i) What is the content of matrix need 7
- ii) Is the system in safe state. 7
- b) Discuss round robin scheduling policy with its merits and demerits. What is the impact of the quantum of time slice on the system performance. 7

Unit - IV

7. a) Explain paging and segmentation. How they are helpful in removing fragmentation? 6
- b) Explain the concept of dirty bit for improving the performance during page fault. 4
- c) Explain the impact of page size on the overall system performance. 4