

7. In contiguous allocation:
- (a) each file must occupy a set of contiguous blocks on the disk
 - (b) each file is a linked list of disk blocks
 - (c) all the pointers to scattered blocks are placed together in one location
 - (d) None of these
8. Consider a disk with 10 blocks, where blocks 1, 4, 6, 8, 10 are free and the rest are allocated. The free space bit map would be
- (a) 1001010101
 - (b) 1010100101
 - (c) 1001010111
 - (d) 0110101010
9. The dmesg command
- (a) Shows user login logoff attempts
 - (b) Shows the syslog file for info messages
 - (c) Kernel log messages
 - (d) Shows the daemon log messages
10. Which of the following is FALSE?
- (a) Context switch time is longer for kernel level threads than for user level threads
 - (b) User level threads do not need any hardware support
 - (c) Related kernel level threads can be scheduled on different processors in a multiprocessor system
 - (d) Blocking one kernel level thread blocks all other related threads

PART - B (5 x 2 = 10 Marks)

- 11. Illustrate process transition diagram.
- 12. List the necessary conditions for the occurrence of a deadlock.
- 13. When do page fault occur?
- 14. What are the operations that can be performed on a directory?
- 15. Brief about kernel modules in Linux system.

PART - C (5 x 16 = 80 Marks)

- 16. (a) (i) Demonstrate about the evolution of virtual machine. Also explain how virtualization could be implemented in Operating system. (8)
- (ii) Enumerate different operating system structures and explain with a neat sketch. (8)

Or

- (b) (i) Explain in detail the various multithreaded models. (6)
- (ii) Explain about Inter Process Communication. (10)
17. (a) (i) Explain the FCFS, Preemptive and Non-Preemptive versions of Shortest Job First and Round Robin (time-slice2) scheduling algorithms with Grantt Chart for the four processes given. Compare their average turn around and wait time. (10)

Process	Arrival Time	Burst time
P1	0	10
P2	1	6
P3	2	12
P4	3	15

- (ii) Define semaphore. Explain the use of semaphore in synchronization problem with an example. (6)

Or

- (b) Consider the following snapshot of a system:

<i>Process</i>	<i>Allocation</i>				<i>Max</i>				<i>Available</i>			
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>P0</i>	0	0	1	2	0	0	1	2	1	5	2	0
<i>P1</i>	1	0	0	0	1	7	5	0				
<i>P2</i>	1	3	5	4	2	3	5	6				
<i>P3</i>	0	6	3	2	0	6	5	2				
<i>P4</i>	0	0	1	4	0	6	5	6				

Answer the following question using banker's algorithm: (i) what is the content of the need matrix? (ii) Is the system in a safe state? (iii) If the request from process *P1* arrives for (0, 4, 2, 0), can the request be granted immediately. (16)

18. (a) (i) With neat diagram, Explain the process of segmentation. (8)
- (ii) Explain in detail demand paged memory management. (8)

Or

- (b) Explain about the concepts of virtual memory in detail. (16)

19. (a) (i) State about Disk Formatting and Boot Block. (8)
(ii) Explain shortest-seek-time-first (SSTF) algorithm, SCAN and C-SCAN with example. (8)

Or

- (b) (i) Describe the various disk allocation methods with its merits and demerits. (10)
(ii) How reliability and protection is provided in a file system. (6)
20. (a) Explain in detail the design principles, kernel modules, process management, scheduling in LINUX system. (16)

Or

- (b) (i) Describe about system components in Windows 2000. (8)
(ii) Discuss how networking is implemented in Windows 2000. (8)