

## Note:

1. Question 1 is compulsory.
2. Attempt any four questions from the remaining six questions.

1. a) Explain different File Allocation Techniques. 10  
 b) What is deadlock? What are the necessary conditions for deadlock? Explain the techniques for handling deadlock? 10
2. a) Differentiate between the following: 8  
 1) Monolithic kernel & Microkernel  
 2) User level Thread & Kernel Level Thread.  
 b) Explain the concept of Demand paging? On a simple paging system with 64 entries of 11 bits(including valid/invalid bit) each, and a page size of 512 bytes. 7  
 a) How many bits in a logical address specify offset? muadda.com  
 b) How many bits in a logical address specify page number?  
 c) How many bits in a physical address specify frame number?
3. a) Consider the following set of processes. 8

| Process | Arrival Time | Burst Time |
|---------|--------------|------------|
| A       | 0.0000       | 4          |
| B       | 1.0001       | 3          |
| C       | 2.0001       | 3          |
| D       | 3.0001       | 5          |

Draw a Gantt Chart, and find average waiting time and average turnaround time for following process scheduling algorithm.

- (a) FCFS First come first served
- (b) Shortest Job first ( preemptive)
- (c) Round robin (quantum =2)
- b) Explain the Domain structure and Access control Matrix for protection of the system. 7  
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4. a) What is Semaphore? How semaphores are used to solve the Producer Consumer problem? 8  
 b) Explain different types of thread models. 7

[TURN OVER]

5. a) Given the disk has 200 (0-199) cylinders. Suppose the disk queue contains the request for I/O to blocks on the cylinder in following order: 8

55, 58, 39, 18, 90, 160, 150, 38, 184

The head of the disk drive is currently at cylinder at 100, previous request served was 130. What are the total head movements for the following algorithms?

a) FIFO    b) SSTF    c) SCAN    d) CSCAN

- b) Explain Direct Memory Access in detail. muadda.com 7

6. a) Given reference string to the following pages by a program: 8

0, 9, 0, 1, 8, 1, 8, 7, 8, 7, 1, 2, 8, 2, 7, 8, 2, 3, 8, 3

How many page default will occur for the following page replacement algorithms, assuming three frames?

- i) LRU Replacement.  
ii) FIFO replacement.  
iii) Optimal replacement.

- b) Explain Linker and Loader 7

7. Write short notes on: (Any Three) (8)

- a) Monitors 15  
b) Android OS  
c) Context Switch muadda.com  
d) Translation Look aside buffer  
e) Thrashing