

**N.B.**(1) Question no 1 is compulsory

(2) Attempt any **three** questions out of remaining five questions

1. Solve any **four**
  - (i) Why page size is always power of 2? 05
  - (ii) Define C-SCAN disk scheduling. 05
  - (iii) Explain difference between signal processor and multi-processor system. 05
  - (iv) Explain different states of process. 05
  - (v) State characteristics of good process scheduler 05
  - (vi) Distinguish between CPU bound process and IO bound process? 05
  
2. (a) What is process control block? Explain its significance. 10
- (b) Explain solution to avoid deadlock in dining philosopher problem 10
  
3. (a) What is deadlock ? Explain necessary and sufficient conditions for deadlock to occur. 10  
       What is the difference between Deadlock avoidance and prevention? 10
  
- (b) Discuss situations in which the most frequently used (MFU) page replacement algorithm generates fewer Page faults than the least recently used (LRU) page replacement algorithm. Also discuss under what circumstances the opposite holds. 10
  
4. (a) What is Operating System ? Explain different functions and objectives of operating system. 10
- (b) What is mutual exclusion? Explain wait() and signal(). 10  
       Explain how mutual exclusion is achieved semaphore
  
5. (a) Explain resource allocation graph with example. 10
- (b) Explain various I/O buffering techniques. 10
  
6. (a) What are system calls in an operating system? Explain any five system calls. 10
- (b) Explain techniques of disk scheduling. 10