

(3 Hours)

[Total Marks : 100]

Operating System

4/06/09

3pm to 6pm

N.B. : (1) Question No.1 is compulsory.

(2) Attempt any four questions from remaining six questions.

(3) Illustrate answer with sketches wherever required.

1. (a) What is operating system ? Explain in brief the evolution of operating system over the years. 10
- (b) What are the objectives and functions of O.S ? Explain in brief 'Modern Unix Kernel'. 10
2. (a) Explain multiprocessor scheduling. 10
- (b) Explain in details reasons for process creation and process termination. 10
3. (a) Which of the following scheduling algorithms could result in starvation ? 4
 - (i) First-Come, First Serve (iii) Round Robin
 - (ii) Shortest Job First (iv) Priority.
- (b) Consider the following set of processes, with the length of CPU burst given in milliseconds :- 16

Process	Burst time	Priority
P ₁	10	3
P ₂	1	1
P ₃	2	3
P ₄	1	4
P ₅	5	2

The processes are assumed to have arrived in the order P₁, P₂, P₃, P₄, P₅ all at time 0.

- (i) Draw Gantt charts for : FCFS, SJF, non-preemptive priority and RR (Quantum = 1).
- (ii) What is turn around time of each process for each of the above algorithms (FCFS, SJF, priority, RR)?
- (iii) What is the time of each process for each of above algorithms : (FCFS, SJF, priority, RR)?
- (iv) Which algorithm results in the minimum average waiting time ?

4. (a) What is deadlock ? Explain various deadlock prevention techniques. 10
- (b) Explain various I/O buffering techniques. 10
5. (a) Explain paging in details. Describe how logical address converted into physical address. 10
- (b) Calculate hit and miss using various page replacement policies (LRU, OPT, FIFO) for following page frame sequence, page frame size is 3. 10
0, 4, 3, 2, 1, 4, 6, 3, 0, 8, 9, 3, 8, 5.
6. (a) Explain file allocation methods in details. 10
- (b) What are the characteristics of real-time operating system ? Explain in brief the real time scheduling. 10

7. Write a short notes on :-

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- (a) File access method
- (b) Monitor
- (c) Semaphore.
- (d) RAID