

- 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 :-

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) 10 for following page frame sequence, page frame size is 3.
 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 :- 20
 (a) File access method
 (b) Monitor
 (c) Semaphore.
 (d) RAID

Process	Block time	Priority
---------	------------	----------

milliseconds :-

- (b) Consider the following set of processes with the length of CPU burst given in table :-
- | | |
|-----------------------------|-------------------|
| (i) Shortest Job First | (iv) Round Robin |
| (ii) First Come First Serve | (iii) Round Robin |
3. (a) Which of the following scheduling algorithms could result in starvation ? 4
 (b) Explain in detail reasons for process creation and process termination. 10
5. (a) Explain multiprocessor scheduling. 10
- Kernel:
- (b) What are the objectives and functions of O.S ? Explain in brief Modern Unix 10 over the years.
1. (a) What is operating system ? Explain in brief the evolution of operating system 10
- (3) illustrate answer with sketches wherever required
- (5) Answer any four questions from remaining six questions
- M.B. : (4) Question no. 1 is compulsory

(3 Hours)

(Total Marks : 100)

COU 5283-08

(REGULAR COURSE)

VB-3111

2020/08-08/02