QUESTION BANK

OPERATING SYSTEMS (CSE210)

MODULE 2

Text Book

"Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", 9th Edition, John Wiley and Sons Inc., 2012".

S. No	Questions	Text Book Page No.	Bloom's Level
1	**Define** Thread? What are the benefits of multithreaded programming?	**163-168**	Knowledge
2	**Distinguish** between user level thread and kernel level thread.	**163-168**	Comprehension
3	**Describe** the multithreading models in operating system.	**169**	Knowledge
4	**Explain** the need of short term, long term and medium term schedulers in scheduling.	**112,263**	Comprehension
5	**Describe** the differences between preemptive scheduling and non-preemptive scheduling.	**263**	Knowledge
6	**List** out the various scheduling criteria for CPU scheduling?	**265**	Knowledge
7	Define Scheduler? Consider the following set of processes, with the arrival times and the CPU burst times given in milliseconds. 	Process	Arrival-Time	Burst-Time	 	P1	0	5	 	P2	1	3	 	P3	2	3	 	P4	4	1	 **Compute** the average turnaround time and average waiting time for these processes with	**266-275**	Application

	the preemptive shortest remaining processing time first (SRTF) algorithm?		
8	Following is the snapshot of a CPU: <table><tr><td>Process</td><td>CPU Burst</td><td>Arrival Time</td></tr><tr><td>P1</td><td>75</td><td>0</td></tr><tr><td>P2</td><td>40</td><td>10</td></tr><tr><td>P3</td><td>25</td><td>10</td></tr><tr><td>P4</td><td>20</td><td>80</td></tr><tr><td>P5</td><td>45</td><td>85</td></tr></table> Draw the Gantt chart and **compute** the avg. turnaround time and avg. waiting time for FCFS (First Come First Served), SJF (Shortest Job First), SRTF (Shortest Remaining Time First) and RR (Round Robin with time quantum 15) scheduling algorithms.	**266-275**	Application
9	Consider the following set of process, with the length of the CPU-burst time given in milliseconds: <table><tr><td>Process</td><td>Burst-Time</td><td>Priority</td></tr><tr><td>P1</td><td>20</td><td>3</td></tr><tr><td>P2</td><td>2</td><td>1</td></tr><tr><td>P3</td><td>4</td><td>3</td></tr><tr><td>P4</td><td>2</td><td>4</td></tr><tr><td>P5</td><td>10</td><td>2</td></tr></table> The processes are assumed to have arrived in the order p1, p2, p3, p4, p5, all at time 0. a) Draw four Gantt charts **illustrate** the execution of these process using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=3) scheduling.	**266-275**	**Application**

	b) What is the turnaround time of each process for each of the scheduling algorithms in part a? c) What is the waiting time of each process for each of the scheduling algorithms in part a? d) Which of the scheduling algorithm in part a results in the minimal average waiting time (over all processes)?		
10	Most round-robin schedules uses a fixed size quantum. Give an argument in favor of a small quantum. Also give an argument in favor of a large quantum. **Distinguish** the types of systems and jobs to which the argument apply.	**266-275**	Knowledge
11	**Explain** the following CPU scheduling algorithms with suitable example: a) Priority scheduling b) SRTF	**266-275**	Comprehension
12	**Describe** the various CPU scheduling algorithms.	**266-275**	Knowledge
13	Suppose that the following processes arrive for execution at the times indicated. Each process will run the listed amount of time. In answering the questions, use non-preemptive scheduling and base all decisions on the information you have at the time the decision must be made. Process Arrival Time Burst Time P1 0.0 8 P2 0.4 4 P3 1.0 1 a. **Compute** the average turnaround time for these processes with the FCFS scheduling algorithm? b. **Compute** the average turnaround time for these processes with the SJF scheduling algorithm?	**266-275**	Application
14	**Discuss** how the following pairs of scheduling criteria conflict in certain settings. i) CPU utilization and response time	**266-275**	Comprehension

	ii) Average turnaround time and maximum waiting time iii) I/O device utilization and CPU utilization.		
15	**Explain** in detail about multilevel queue and multilevel feedback queue algorithm.	**273**	Comprehension