INDUS INSTITUTE OF TECHNOLOGY & ENGINEERING

COMPUTER SCIENCE AND ENGINEERING DEPARTMENT

Operating System [CE0418] Question Bank [Unit 1 & 2]

Subject Name: Operating System

Subject Code: CE0418

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Semester: CSE 4 [Div. A to F]

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1. What is Operating System? Explain different types of operating system.
2. Define operating system. Explain the different views of operating system.
3. Explain evolution of operating system
4. Define process. Differentiate between a process and a program.
5. Explain different service provided by operating system.
6. What is operating system? Give the view of OS as a resource manager.
7. What is Batch operating System? Discuss its advantages and disadvantages.
8. What is Time-sharing operating System? Discuss its advantages and disadvantages.
9. What is distributed operating System? Discuss its advantages and disadvantages.
10. What is Real-time operating System? Discuss its advantages and disadvantages.
11. Difference between process and thread.
12. Explain the objectives and functions of operating systems.
13. Explain different states of a process with a suitable diagram.
14. What is PCB? Discuss its major fields.
15. Explain the microkernel system architecture in detail.
16. Explain monolithic operating system structure.
17. Define a process. Explain the process state transition with a neat diagram.
18. Explain Thread Life Cycle with diagram.
19. What is thread? Explain thread Structure? And explain any one type of thread in details.
20. What is thread and what are the differences between user-level threads and kernel supported threads?
21. Define term Scheduler, Scheduling and Scheduling Algorithm with example.

22. Define mutual exclusion. How mutual exclusion can be achieved?
23. Explain context switching.
24. What is System call? Discuss different types of system calls.
25. Write short note: 1) Semaphores 2) Monitors
26. Define : 1) Critical Section 2) Waiting Time 3) Race condition
27. Explain producer-consumer problem and solve it using semaphore. Write pseudo code for the same.
28. Explain the IPC Problem known as Dining Philosopher Problem.
29. Explain IPC Problem – Readers & Writers Problem.
30. What is Mutex? Write a pseudo code to achieve mutual exclusion using mutex.
31. What do you mean by Deadlock Avoidance? Explain the use of Banker's Algorithm for Deadlock Avoidance with illustration.
32. Consider the snapshot of the system with Five Processes and Four types of resources A,B,C,D.

	Allocated Resources				**Max. Requirement**			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**
P0	0	0	1	2	0	0	1	2
P1	1	0	0	0	1	7	5	0
P2	1	3	5	4	2	3	5	6
P3	0	6	3	2	0	6	5	2
P4	0	0	1	4	0	6	5	2

Currently Available set of resources is (1,5,2,0). Find the content of Need Matrix. Is the System in Safe State?

33. Which are the necessary conditions for Deadlock? Explain Deadlock recovery in brief.
34. What is Deadlock? List the conditions that lead to deadlock. How Deadlock can be prevented?
35. Difference between deadlock and starvation.
36. What is RAG? Explain briefly.
37. Explain UNIX Multi-level feedback queue scheduling.
38. Find average waiting time for Shortest job first scheduling, and Round robin scheduling algorithm.

Process	CPU burst time
P1	6
P2	8
P3	5
P4	2

CPU burst time is given in millisecond and time quantum is 4.

39. Solve following by SJF preemptive and non-preemptive. Draw Gantt Chart, Average Waiting Time and Average Turnaround Time. Which one is better as per average turnaround time?

Process	Arrival Time	Burst Time
P1	0	7
P2	2	4
P3	4	2
P4	7	1

40. Consider the following set of processes with the length of CPU burst time given in the milliseconds.

Process	Arrival Time	Burst time	Priority
P1	0	8	3
P2	1	1	1
P3	2	3	2
P4	3	2	3
P5	4	6	4

Calculate average turnaround time and average waiting time for First-come first served scheduling, Shortest job first scheduling and Priority scheduling algorithm.

41. Write a Shell Script to find factorial of given number.
42. Explain following Commands in UNIX : man, cat, sort, grep, chmod, head, tail, ls, mkdir … (All commands)
43. Write a shell script to find greater number out of 3 numbers.
44. Solve following by Round Robin process scheduling algorithm. Draw Gantt Chart, Average Waiting Time and Average Turnaround Time for time slice=4 and time slice=2.

Process	Arrival Time	Burst Time
P1	0	7
P2	2	4
P3	3	2
P4	9	1