

ANURAG Engineering College
(An Autonomous Institution)

II B.Tech II Semester Supplementary Examinations, December – 2024

OPERATING SYSTEMS

(COMPUTER SCIENCE AND ENGINEERING & INFORMATION TECHNOLOGY)

Time: 3 Hours

Max. Marks: 60

Section – A (Short Answer type questions)

(10 Marks)

Answer All Questions

	Course Outcome	B.T Level	Marks
1. What is Operating System?	CO1	L1	1M
2. Define System Call. List the categories of it.	CO1	L1	1M
3. Define process.	CO2	L1	1M
4. What is preemptive and nonpreemptive scheduling?	CO2	L1	1M
5. What is critical section problem?	CO3	L1	1M
6. Define semaphore.	CO3	L1	1M
7. What is virtual memory?	CO4	L1	1M
8. Define external fragmentation. What are the causes for external fragmentation?	CO4	L1	1M
9. List various file operations.	CO5	L1	1M
10. What are the different accessing methods of a file.	CO5	L1	1M

Section B (Essay Questions)

Answer all questions, each question carries equal marks.

(5 X 10M = 50M)

- | 11. A) List out different services of Operating Systems and explain each service. | CO1 | L3 | 10M | | | | | | | | | | | | | | | | | | |
|--|------------|--------------|-----|---------|------------|--------------|----|---|---|----|---|---|----|---|---|----|---|---|----|---|---|
| OR | | | | | | | | | | | | | | | | | | | | | |
| B) Write the differences between user level threads and kernel level threads. | CO1 | L3 | 10M | | | | | | | | | | | | | | | | | | |
| 12. A) Explain in detail about Shortest Job First scheduling algorithm. | CO2 | L2 | 10M | | | | | | | | | | | | | | | | | | |
| OR | | | | | | | | | | | | | | | | | | | | | |
| B) Consider the following set of processes with the length of the CPU-burst time in given ms: | CO2 | L3 | 10M | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Process</th> <th>Burst Time</th> <th>Arrival time</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td style="text-align: center;">8</td> <td style="text-align: center;">0</td> </tr> <tr> <td>P2</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1</td> </tr> <tr> <td>P3</td> <td style="text-align: center;">9</td> <td style="text-align: center;">2</td> </tr> <tr> <td>P4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> </tr> <tr> <td>P5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> </tr> </tbody> </table> | | | | Process | Burst Time | Arrival time | P1 | 8 | 0 | P2 | 4 | 1 | P3 | 9 | 2 | P4 | 5 | 3 | P5 | 3 | 4 |
| Process | Burst Time | Arrival time | | | | | | | | | | | | | | | | | | | |
| P1 | 8 | 0 | | | | | | | | | | | | | | | | | | | |
| P2 | 4 | 1 | | | | | | | | | | | | | | | | | | | |
| P3 | 9 | 2 | | | | | | | | | | | | | | | | | | | |
| P4 | 5 | 3 | | | | | | | | | | | | | | | | | | | |
| P5 | 3 | 4 | | | | | | | | | | | | | | | | | | | |
| Draw Gantt charts illustrating the execution of these processes using FCFS, SJF scheduling. Also calculate waiting time and turnaround time for each scheduling algorithms. | | | | | | | | | | | | | | | | | | | | | |
| 13. A) Explain in detail about Inter Process Communication. | CO3 | L2 | 10M | | | | | | | | | | | | | | | | | | |
| OR | | | | | | | | | | | | | | | | | | | | | |
| B) Give a solution using semaphores to solve dining philosopher problem. | CO3 | L3 | 10M | | | | | | | | | | | | | | | | | | |

14. A) What is demand paging in memory management? Write the steps required to handle a page fault in demand paging. CO4 L3 10M
- OR**
- B) Define paging. Explain the implementation of paging. CO4 L3 10M
15. A) What are files and explain the access methods for files? CO5 L3 10M
- OR**
- B) Discuss in detail about file allocation methods. CO5 L3 10M