

ANURAG Engineering College

(An Autonomous Institution)

II B.Tech I Semester Supplementary Examinations, June/July–2024

OPERATING SYSTEMS

(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

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 a bootstrap program in OS?	CO1	L1	1M
2. What are the different states of a Process?	CO1	L1	1M
3. How can a Deadlock be prevented?	CO2	L1	1M
4. What is the use of Dispatcher in operating system?	CO2	L1	1M
5. Name the different types of Semaphores.	CO3	L1	1M
6. What are the models of IPC?	CO3	L1	1M
7. Differentiate between Paging and Segmentation	CO4	L2	1M
8. What is Belady's Anomaly?	CO4	L1	1M
9. List the operations that can be performed on a Directory.	CO5	L1	1M
10. Compare the various File organization methods.	CO5	L2	1M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Distinguish between client-server and peer-to-peer models of distributed system. CO1 L2 10M
- OR**
- B) Explain process states and process control block in detail. CO1 L2 10M
12. A) What are the necessary conditions for a deadlock to occur? Explain. CO2 L2 10M
- OR**
- B) Consider following processes with length of CPU burst time in milliseconds.
- | Process | Burst time |
|---------|------------|
| P1 | 5 |
| P2 | 10 |
| P3 | 2 |
| P4 | 1 |
- All process arrived in order p1, p2, p3, p4 at time zero.
- i) Draw Gantt charts illustrating execution of these processes for SJF and round robin (quantum=1).
- ii) Calculate waiting time for each process for each scheduling algorithm.
- iii) Calculate average waiting time for each scheduling algorithm.
13. A) Why mutual exclusion is required? Explain any two methods of achieving mutual exclusion in detail. CO3 L2 10M
- OR**
- B) Explain the following terms related to IPC: CO3 L2 10M
- i) Race condition ii) Critical Region.

14. A) Consider the following page reference string. CO4 L3 10M
1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2
How many page faults would occur for the following replacement algorithm, assuming four and six frames respectively?
i) LRU page replacement. ii) FIFO page replacement.
- OR**
- B) Explain following allocation algorithms. CO4 L2 10M
i) First fit ii) Best fit iii) Worst fit iv) Next fit
15. A) Explain linked list allocation & index allocation of File system in detail. CO5 L2 10M
- OR**
- B) Explain about the functions of File management system calls. CO5 L2 10M