

**II B. TECH II SEMESTER REGULAR EXAMINATIONS, JUNE - 2022**  
**OPERATING SYSTEMS**  
**(COMMON TO CSE, INF, AID, CSM, CIC AND CSO)**

Time: 3 hours

Max. Marks: 70

**Note:** Answer **ONE** question from each unit (**5 × 14 = 70 Marks**)

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UNIT-I

1. a) What is Operating System? Discuss about different types of Operating Systems. [7M]
- b) What is meant by system call and list out some of the system calls by taking an example? [7M]

(OR)

2. a) Briefly Explain the different types of operating systems: parallel systems, distributed systems and real-time systems? [7M]
- b) Explain the operating system structure and its functions. [7M]

UNIT-II

3. a) Discuss about Process Control Block with diagram. [7M]
- b) Enumerate the advantages and disadvantages of supporting multi-threaded applications with kernel-level threads. [7M]

(OR)

4. a) Consider the following five processes, respective burst times and priorities :

| <b>Process</b>    | P1 | P2 | P3 | P4 | P5 |
|-------------------|----|----|----|----|----|
| <b>Burst Time</b> | 10 | 1  | 2  | 1  | 1  |
| <b>Priority</b>   | 3  | 1  | 3  | 2  | 2  |

The processes are all arrived at Time 0. Draw the Gantt chart that illustrates the execution of the processes using priority scheduling algorithm. Determine the turnaround and waiting time for each process.

- b) Compare User level threads and Kernel level threads. [7M]

UNIT-III

5. a) Determine Synchronization and how it can be applied in dining philosopher problem. [7M]
- b) Illustrate Banker's deadlock-avoidance algorithm with an example. [7M]

(OR)

6. a) What is the critical section? What are the minimum requirements that should be satisfied by a solution to critical section problem? [7M]
- b) Discuss different ways to prevent Deadlock. [7M]

## UNIT-IV

7. a) Discuss about various memory allocation strategies. [7M]
- b) Consider the following page reference string **1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6** assuming three frames and all frames are initially empty. For the given input which of the following is efficient page replacement algorithm. [7M]
- (i) LRU      (ii) Optimal

(OR)

8. a) Given memory partition of 100 KB, 500 KB, 200 KB and 600 KB ( in order). Show with neat sketch how would each of the first-fit, best-fit and worst fit algorithms place processes of 412 KB, 317 KB, 112 KB and 326 KB (in order). [7M]
- b) Define Virtual Memory. Explain the process of converting virtual addresses to physical addresses with a neat diagram. [7M]

## UNIT-V

9. a) Describe about various ways of organizing directories. [7M]
- b) Compare and Contrast Free Space Management and Swap Space management. [7M]

(OR)

10. a) Explain File allocation methods. [7M]
- b) Explain Swap Space Management systems. [7M]

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