

**III B. Tech I Semester Supplementary Examinations, July -2023****OPERATING SYSTEMS**

(Common to CE,EEE,ME,ECE)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

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**UNIT-I**

1. a) Define operating system and list the basic services provided by operating system. [7M]  
 b) Explain the essential properties of: i) Batch System ii) Time sharing System. [7M]  
 (OR)
2. a) Describe the differences between symmetric and asymmetric multiprocessing. [7M]  
 What are three advantages and one disadvantage of multiprocessor systems?  
 b) What are the various Process control system calls? Explain. [7M]

**UNIT-II**

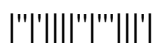
3. a) Explain in detail, the sequence of actions taken by the operating system to context switch between processes. [7M]  
 b) What is a cooperating process? Explain the reasons for process cooperation. [7M]  
 Represent the communication models.  
 (OR)
4. a) Define Schedulers. What are the different types of schedulers? Explain with suitable examples. [4M]  
 b) Consider following processes with length of CPU burst time in *ms*. Process [P1, P2, P3, P4] with Burst time[5, 10, 2, 1] arrived in order and in time zero. [10M]  
 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

**UNIT-III**

5. a) Define demand paging in memory management. What are the steps required to handle a page fault in demand paging? [7M]  
 b) Explain the concept of segmentation in detail. [7M]  
 (OR)
6. a) Explain hierarchical page table and inverted page table. [7M]  
 b) Calculate page faults for (LRU, OPTIMAL) for following sequences where page frame size is 3. -- [0,1,2,1,4,2,3,7,2,1,3,5,1,2,5]. [7M]

**UNIT-IV**

7. a) What is Process Synchronization? Write in detail about process synchronization hardware. [7M]  
 b) Explain Readers & Writers problem? Give its solution with semaphore. [7M]  
 (OR)
8. a) What is Safe-state? Write the Bankers algorithm for deadlock avoidance and explain it with the help of an example. [7M]  
 b) Explain various methods for recovery from deadlock. [7M]



**UNIT-V**

9. a) Explain the following concepts with respect to file: [7M]  
i) File operations ii) File Types.
- b) What are the typical access rights that may be granted or denied to a particular user for a particular file? [7M]
- (OR)
10. a) In detail explain the structure of disk with a neat diagram. [7M]  
b) Explain how the exceptions are handled in LINUX system. [7M]

