

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
Fundamental of Operating Systems

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
 2. M : Marks, L: Bloom's level, C: Course outcomes.*

Module – 1

Module – 1			M	L	C
Q.1	a.	What are system calls? List and explain the different types of system calls.	10	L2	CO1
	b.	Explain the different reviews of operating systems.	10	L2	CO1

OR

Q.2	a.	Define operating system and explain the dual mode of operating system.	6	L2	CO1
	b.	With neat diagram, explain computer system organization and operation.	8	L2	CO1
	c.	List and explain the user and operating system interface.	6	L2	CO1

Module – 2

Q.3	a.	Define process and its states with neat diagram.	6	L2	CO2
	b.	What is thread? How it is different from process.	6	L2	CO2
	c.	What is multithread process and explain the benefits of multithreading process.	8	L2	CO2

OR

Q.4	a.	Explain the different types of inter process communication with neat diagram.	8	L2	CO2
	b.	Explain different multi threading model. With their advantages and disadvantages.	6	L2	CO2
	c.	Explain the Process Control Block (PCB) with neat diagram.	6	L2	CO2

Module – 3

Q.5	a.	Calculate the average waiting time and average turns around time using preemptive SJF, FCFS algorithms.	10	L3	CO3															
		<table border="1"> <thead> <tr> <th>Prons</th> <th>Arrival time</th> <th>Burst time</th> </tr> </thead> <tbody> <tr> <td>P₁</td> <td>0</td> <td>9</td> </tr> <tr> <td>P₂</td> <td>1</td> <td>4</td> </tr> <tr> <td>P₃</td> <td>2</td> <td>9</td> </tr> <tr> <td>P₄</td> <td>3</td> <td>5</td> </tr> </tbody> </table>	Prons	Arrival time	Burst time	P ₁	0	9	P ₂	1	4	P ₃	2	9	P ₄	3	5			
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	b.	Explain Readers writers problem and their solutions using semaphore.	10	L2	CO3															

OR

Q.6	a.	Explain critical section problem and discuss Peterson solution.	10	L2	CO3								
	b.	Calculate average waiting time for the given set of process with Round Robin algorithm.	5	L3	CO3								
		<table border="1"> <thead> <tr> <th>Process</th> <th>Burst time</th> </tr> </thead> <tbody> <tr> <td>P₁</td> <td>24</td> </tr> <tr> <td>P₂</td> <td>3</td> </tr> <tr> <td>P₃</td> <td>3</td> </tr> </tbody> </table> <p>Time quantum = 4 ms Assume that all the process enters the outer at t = 0</p>	Process	Burst time	P ₁	24	P ₂	3	P ₃	3			
Process	Burst time												
P ₁	24												
P ₂	3												
P ₃	3												

Module – 4

Q.7	a.	What is deadlock and what are the necessary conditions for deadlock to occur.	10	L2	CO4
	b.	Explain different methods and algorithm used to avoid deadlock.	10	L2	CO4

OR

Q.8	a.	With neat diagram, explain the structure of page table any two.	10	L2	CO4
	b.	What is paging? Explain with neat diagram paging hardware with TLB.	10	L2	CO4

Module – 5

Q.9	a.	What is demand paging? Explain the steps in handling page pattern using neat diagram.	8	L2	CO5
	b.	Explain various directory structures with neat diagram.	8	L2	CO5
	c.	Discuss need for page replacement and different page replacement methods.	4	L2	CO5

OR

Q.10	a.	What is file? Explain the file mounting.	6	L2	CO5
	b.	Explain different allocations method.	8	L2	CO5
	c.	Write a note on File Sharing.	6	L2	CO5
