PCET LIBRARY BANGALORE-49

CBCS SCHEME

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BCS/BIS654B

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2026
Fundamentals 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	M	L	C
Q.1	a.	What is Operating System? Explain with neat diagram the components of computer system.	10	L2	CO1
	b.	Explain the operating system operations.	10	L2	CO1
		OR			
Q.2	a.	Explain the services provided by the operating system.	10	L2	CO1
	b.	What are system calls? Explain the different types of system calls.	10	L2	CO1
		Module – 2			
Q.3	a.	Define Process. Explain process state diagram and process control block.	10	L2	CO1
	b.	Define IPC. Explain message passing and shared memory with neat diagram.	10	L2	CO1
		OR			
Q.4	a.	Explain the operations on processes.	10	L2	CO2
	b.	Mention and explain different multithreading models.	10	L2	CO2
		Module – 3			
Q.5	a.	What is Scheduling? Explain the scheduling criteria.	10	L2	CO2
	b.	Consider the following set of processes, with the length of CPU burst given in milliseconds. Process: P_1 Burst Time 6; P_2 8; P_3 7; P_4 3 Draw Gantt chart and calculate average waiting time for FCFS and SJF.	10	L3	CO2

		OR			
Q.6	**a.**	What is critical section problem? What are its requirements? Explain Peterson's solution for critical section.	**10**	**L2**	**CO2**
	b.	Define semaphore. Explain its usage and implementation.	**10**	**L2**	**CO2**
		Module – 4			
Q.7	**a.**	Define Deadlock. What are the necessary conditions for deadlock to occur? Describe the resource allocation graph.	**10**	**L2**	**CO3**
	b.	Explain the Deadlock prevention in detail.	**10**	**L2**	**CO3**
		OR			
Q.8	**a.**	What is Paging? Explain with neat diagram paging hardware with TLB.	**10**	**L2**	**CO3**
	b.	Explain the contigious memory allocation with neat diagram.	**10**	**L2**	**CO3**
		Module – 5			
Q.9	**a.**	Explain the steps in handling a page fault with neat diagram.	**10**	**L2**	**CO3**
	b.	Explain page replacement algorithms with example.	**10**	**L2**	**CO3**
		OR			
Q.10	**a.**	What is File? What are its attributes? What are the file operations?	**10**	**L2**	**CO3**
	b.	Explain the different file access methods.	**10**	**L2**	**CO3**

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