CBCS SCHEME

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22MCA12

First Semester MCA Degree Examination, June/July 2024
Operating System Concepts

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 multiprogramming and time sharing system.	06	L1	CO1
	b.	Explain dual mode operating system with a neat block diagram.	10	L1	CO1
	c.	Distinguish between the client – server and peer – to – peer models of distributed system.	04	L2	CO1
		OR			
Q.2	a.	What is Interprocess communication? Explain direct and Indirect communication with respect to message passing system.	10	L2	CO1
	b.	What are system calls? Briefly print out its types.	04	L2	CO1
	c.	Analyze modular kernel approach with layered approach with a neat sketch.	06	L2	CO1
		Module – 2			
Q.3	a.	What is process? What is PCB? What are the different states of a process? Explain using diagrams.	10	L2	CO2
	b.	Write a note on IPC. Explain two methods.	04	L2	CO2
	c.	Explain in detail direct and indirect communication.	06	L2	CO1
		OR			
Q.4	a.	What is a multithread programming? Explain multithreading models.	08	L1	CO2
	b.	What is CPU scheduler? Consider the following set of process, with the length of the CPU-burst time given in milliseconds. Find Turnaround Time and Waiting time.	12	L3	CO2
		Module – 3			
Q.5	a.	What is monitor? With a neat diagram explain the working of monitor.	06	L2	CO3
	b.	What is a Semaphore? Define wait and signal operation. Explain the usage of semaphores.	08	L2	CO3
	c.	What is paging? Give advantages and disadvantages.	06	L2	CO3
		OR			
Q.6	a.	What are deadlocks? What are its characteristics? Explain the necessary condition for its occurrence.	10	L1	CO3
	b.	What is Resource Allocation Graph (RAG)? Explain how RAG is very useful in describing deadly embrace by considering your own example.	10	L1	CO3

Process	Arrival Time	Burst Time
P1	0	7
P2	1	5
P3	2	3
P4	3	1
P5	4	2
P6	5	1

		Module – 4			
Q.7	**a.**	Explain the multistep processing of a user program with a neat block diagram.	**06**	**L2**	**CO4**
	b.	Explain with a diagram, how TLB is used to solve the problem of simple paging scheme.	**06**	**L2**	**CO4**
	c.	Distinguish between: i) Logical address space and physical address space ii) Internal fragmentation and External fragmentation iii) Paging and Segmentation	**08**	**L2**	**CO4**
		OR			
Q.8	**a.**	Discuss in detail about contiguous memory allocation with a neat diagram.	**10**	**L2**	**CO4**
	b.	Explain basic method of implementing paging concept.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	What is File Concept? Discuss briefly about file attributes and operation.	**06**	**L2**	**CO5**
	b.	Explain various access methods in File System.	**06**	**L2**	**CO5**
	c.	What is a Directory Structure? Explain scheme for defining the logical of a directory.	**08**	**L1**	**CO5**
		OR			
Q.10	**a.**	Explain about File System Mounting in detail.	**10**	**L2**	**CO5**
	b.	Explain about PROTECTION with types of access.	**10**	**L3**	**CO5**

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