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BCS303

Third Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024
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.	Define operating system. Compare multiprogramming and time sharing system.	8	L1	CO1
	b.	Describe the structure of operating system and its operations.	7	L1	CO1
	c.	Differentiate Client – Server computing and Peer to Peer computing.	5	L1	CO1
		OR			
Q.2	a.	Explain various services of operating system.	8	L2	CO1
	b.	What is system call? Explain all types of system calls.	7	L2	CO1
	c.	What are various system programs? Explain.	5	L1	CO1
		Module – 2			
Q.3	a.	Define process, explain states of a process with diagram.	8	L2	CO2
	b.	Describe shared memory and message passing system of IPC.	7	L2	CO2
	c.	Give a note on virtual machine system with example.	5	L1	CO2
		OR			
Q.4	a.	Discus benefits of Thread, single and multithread process.	8	L2	CO2
	b.	Analyze Thread Models and Thread Libraries.	7	L2	CO2
	c.	Write short notes on Threading issues.	5	L1	CO2
		Module – 3			
Q.5	a.	What are scheduling criteria, explains CPU – I/O burst cycle.	8	L1	CO3
	b.	Discus with example, the FCFS and RR scheduling algorithm.	7	L2	CO3
	c.	Consider the following set of four processes with length of CPU burst in milliseconds.	5	L1	CO3

Process	Burst time
P^1	18
P^2	6
P_3	3
P^4	5

Compute average waiting time for the above process using FCFS and SJF.

		OR			
Q.6	a.	Explain critical section problem and Peterson's solution problem.	8	L2	CO3
	b.	What is Semaphore, explain its usage and implementation.	7	L2	CO3
	c.	Discuss Dining philosopher's problem with example.	5	L2	CO3
		Module – 4			
Q.7	a.	Analyze Deadlock prevention and Deadlock Avoidance.	8	L3	CO4
	b.	Describe in detail the paging and its hardware, model with diagram.	7	L2	CO4
	c.	With a neat diagram, explain Segmentation and its hardware.	5	L3	CO4

		OR			
Q.8	a.	Explain Demand paging and steps in page fault of virtual memory.	8	L2	CO4
	b.	Discuss any two page replacement algorithm.	7	L2	CO4
	c.	What are File operations and File accessing methods?	5	L2	CO4
		Module – 5			
Q.9	a.	Describe Tree structured and acyclic – Graph directories.	8	L1	CO5
	b.	Illustrate contiguous, linked and indexed allocation methods.	7	L2	CO5
	c.	Explain FCFS, SSTF and SCAN disk scheduling.	5	L2	CO5
		OR			
Q.10	a.	Develop a C-program to implement the process systemcalls (Fork( ), exec( ), want( ), create( )).	10	L2	CO6
	b.	Develop a C-program to simulate producer consumer problem.	10	L2	CO6

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