CBCS SCHEME

USN | 2 | J | R | 2 | 3 | C | I | 0 | 3 | 2 |

BCS303

Third Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
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.

			M	L	C
		Module – 1			
Q.1	**a.**	Define Operating System. Explain dual mode of operating systems with a neat diagram.	**06**	**L1 L2**	**CO1**
	b.	Distinguish between the following terms: i) Multiprogramming and Multitasking ii) Multiprocessor and Clustered system	**06**	**L2**	**CO1**
	c.	Explain with a neat diagram VM-WARE Architecture.	**08**	**L1 L2**	**CO1**
		OR			
Q.2	**a.**	List and explain the services provided by OS for the user and efficient operation of system.	**06**	**L2**	**CO1**
	b.	Explain the different computing equipments.	**06**	**L2**	**CO1**
	c.	What are systems calls? List and explain the different types of systems calls.	**08**	**L1 L2**	**CO1**
		Module – 2			
Q.3	**a.**	What is process? Explain process state diagram and process control block with a neat diagram.	**10**	**L1 L2**	**CO2**
	b.	What is interprocess communication? Explain direct and indirect communication with respect to message passing system.	**10**	**L1 L2**	**CO2**
		OR			
Q.4	**a.**	List and explain the different types of multithreading models.	**06**	**L1 L2**	**CO2**
	b.	Calculate the average waiting time and average turnaround time by drawing the Gantt-chart using FCFS, SJF, RR (Q = 4ms) and priority scheduling (Higher Number is having highest priority). Process | B.T. (ms) | Priority P_1 | 24 | 1 P_2 | 03 | 2 P_3 | 03 | 3	**14**	**L3**	**CO2**
		Module – 3			
Q.5	**a.**	What is critical section? Give the Peterson's solution to 2 processes critical section problem.	**05**	**L1 L2**	**CO3**
	b.	Explain Reader's and Writer's problem in detail.	**07**	**L2**	**CO3**
	c.	What is semaphore? Discuss the solution to the classical dinning philosopher problem.	**08**	**L1 L2**	**CO3**