Program: S.Y.B.Sc IT | Semester: III | Program Code: UGIT01

Course: Operating System | Course Code: NUIT303

Duration: 1 Hour | Examination Pattern: NEP-Autonomous- External | Max. Marks: 30

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.
4. CO (Course Outcome), KL (Knowledge Level).

Examination:

REGULAR

Q. 1		**Attempt any THREE of the following.**	[15]	CO's	KL's
	(a)	Design a timeline showing the evolution of Operating Systems and the major features introduced at each stage.		CO1	L6
	(b)	Explain the layered structure of an Operating System with suitable diagram.		CO1	L2
	(c)	Using the provided process table (P1-P4 with arrival, priority and burst times), compute completion times, turnaround times, waiting times, response times, and averages using Priority Scheduling algorithm.		CO2	L3
	(d)	Analyze the conditions that cause a process to move from one state to another.		CO2	L4
	(e)	Evaluate the consequences of improper process synchronization in a concurrent system.		CO3	L5

Process	Arrival Time	Priority	Burst Time
P1	0	3	5
P2	0	1	3
P3	0	4	2
P4	0	2	4

Q. 2		**Attempt any THREE of the following.**	[15]	CO's	KL's
	(a)	Explain the process of swapping with a suitable diagram.		CO4	L2
	(b)	Analyze different security threats and protection mechanisms used in Operating Systems.		CO7	L4
	(c)	Define deadlock and list the necessary prevention techniques for deadlock.		CO5	L1
	(d)	Demonstrate how sequential, direct, and indexed access methods can be used to retrieve records from a file.		CO6	L3
	(e)	Evaluate the effectiveness of Least Recently Used page replacement algorithm using the following page reference string: 1, 2, 3, 1, 4, 5, 2, 1, 6, 3, 2, 4 assuming 3 page frames. Justify which algorithm performs better based on the number of page faults.		CO4	L5

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6 2 1 3 2 4