

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - IV Computer Science & Engineering AI & ML : WINTER : 2024
SUBJECT: OPERATING SYSTEM

Day : Saturday
Date : 07/12/2024

W-23947-2024

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if **NECESSARY**.

Q.1 What is OS? Describe its Services in detail. (10)

OR

Q.1 What are the components of Operating system? (10)

Q.2 What is Process state diagram? Explain scheduler in Detail. (10)

OR

Q.2 What is Thread? Explain life cycle of thread? Also describe tis benefits. (10)

Q.3 Calculate Avg. Waiting time and avg. Turnaround time using SJF Preemptive and non-preemptive Algorithm. (10)

PID	Arrival Time	Burst Time
P1	0	7
P2	2	3
P3	3	2
P4	4	10
P5	5	8

Q.3 What are the criteria for CPU Scheduling? Describe in detail. (10)

Q.4 What is deadlock? Explain the four basic conditions for a deadlock to occur? (10)

OR

Q.4 Consider a system that contains five processes P1, P2, P3, P4, P5, and the three resource types A,B and C. Following are the resources types: A has 10, B has 5 and the resource type C has 7 instances. (10)

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

Answer the following questions using the banker's algorithm

1. What is the reference of the need matrix?
2. Determine if the system is safe of not.

- Q.5 Consider a reference string : 4,7,6,1,7,6,1,2,7,2. The number of frames in the memory is 3. Find out the number of page faults respective to (10)
1. Optimal page Replacement Algorithm
 2. FIFO page Replacement Algorithm
 3. LRU Page Replacement Algorithm

OR

- Q.5 What is Thrashing? What are the causes of thrashing? How it can be limited. (10)
- Q.6 What is meant by RAID? Describe various RAID Levels as employed in modern computer systems. (10)

OR

- Q.6 Consider a disk with 200 tracks and the queue has random requests from different processes in the order: 55, 58, 39, 18, 90, 160, 29, 38, 184, Initially arm is at 67. Find the total Seek time using FIFO, SSTF, SCAN and C-SCAN algorithm. (10)

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