R22 Regulation *Subject code: 4E5GB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Regular Examinations, December 2024

OPERATING SYSTEMS

(CSE(AI&ML))

Maximum Marks: 60 Date:28.12.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	CO	Bloom Tx
All the following questions carry equal marks	(10X1M=10 Marks)		
1.a)	Define operating system.	1	1
b)	List different types of System Calls.	1	1
c)	Define thread.	2	1
d)	Define CPU scheduling & list various scheduling criteria.	2	1
e)	What is critical section problem?	3	1
f)	What are necessary conditions for Deadlock?	3	1
g)	What is demand paging?	4	1
h)	Define Swapping?	4	1
i)	State the importance of seek () file operation.	5	1
j)	List out file system calls.	5	1
	Part-B		
Answer All the following questions.	(5X10M=50Marks)	CO	Bloom Tx
2	Explain the architecture of operating system with neat diagram. [10M]	1	2
	OR		
3	Explain briefly about system calls with examples. [10M]	1	2
4	Consider Five processes P1 to P5 arrived at same time. They have estimated running time 10,2,6,8 and 4 seconds respectively. Their priorities are 3,2,5,4 and 1 respectively with 5 being highest priority. Find the average turnaround time and average waiting time for Round Robin(q=3) and priority scheduling algorithm. [10M]	2	4
	OR		
5	Explain about IPC mechanism in detail. [10M]	2	2
6	Illustrate the concept of Deadlocks. [10M]	3	2
	OR		
7	Explain dining-philosophers problem and derive an algorithm to solve the problem using semaphores? [10M]	3	3

8	Demonstrate briefly about paging with neat diagram. [10M]	4	2
	OR		
9	Consider the following page reference string 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 Determine how many page faults would occur for Optimal page replacement algorithm. Assume three frames are initially empty. [10M]	4	4
10	Discuss about free space management in file system. [10M]	5	6
	OR		
11	Illustrate the implementation of Access matrix [10M]	5	4