R22 Regulation *Subject code: 4E5GB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, May 2025

OPERATING SYSTEMS

(CSE(AI&ML))

Maximum Marks: 60 Date: 19.06.2025 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

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	List various services of operating system.	1M	1	1
b)	Distinguish between multiprogramming and multitasking.	1M	1	1
c)	Define PCB.	1M	2	1
d)	What is the importance of pipes in inter process communication?	1M	2	1
e)	What is semaphore? list types of semaphores.	1M	3	1
f)	State safe, unsafe and deadlock state process?	1M	3	1
g)	What is the main function of the memory-management unit?	1M	4	1
h)	Define Paging.	1M	4	1
i)	State the importance of unlink () file operation.	1M	5	1
j)	What are Goals of Protection?	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Define an operating system? State and explain the basic functions of an operating system?	10M	1	2
	OR			
3	Define system call? List & explain different types of system calls with examples.	10M	1	2
4	Illustrate process state transition with a neat diagram.	10M	2	2
	OR			
5	Consider Six different processes with different arrival time & different CPU Burst time. illustrate ROUND ROBIN scheduling with Time quantum=4.	10M	2	5
6	Explain Classical problems of synchronization with examples?	10M	3	2
	OR			
7	Illustrate Banker's Algorithm for deadlock avoidance with suitable example.	10M	3	4
8	Demonstrate paging hardware with neat diagram.	10M	4	3

	OR			
9	For the following page reference string 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Calculate the page faults applying the following Page replacement algorithms for a memory with three frames: i) LRU ii) FIFO	10M	4	5
10	Explain about various file access methods with examples.	10M	5	2
	OR			
11	Discuss about Implementation of Access Matrix in detail.	10M	5	6