R22 Regulation *Subject code:4E5EB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, April 2026

OPERATING SYSTEMS

(CSE)

Maximum Marks: 60 Date:17.04.2026 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	BTL
1.a)	Define operating system.	1M	1	L1
b)	List services provided by an operating system.	1M	1	L1
c)	Define thread?	1M	2	L2
d)	What is a named pipe?	1M	2	L1
e)	List the types of semaphores?	1M	3	L1
f)	What are necessary conditions for a deadlock?	1M	3	L1
g)	Define segmentation?	1M	4	L2
h)	What is demand paging?	1M	4	L1
i)	What is an access matrix?	1M	5	L1
j)	Name any two file allocation method.	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Discuss various types of system calls with suitable examples.	10M	1	L2
	OR			
3	Explain the various services provided by the operating system.	10M	1	L2
4	Consider Five processes P1 to P5 arrived at same time with 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	L3
	OR			
5	Explain process state transition and PCB with a neat diagram.	10M	2	L2
6	Explain classical problems of synchronization?	10M	3	L2
	OR			
7	Describe dining-philosophers problem? Derive an algorithm to solve the problem using semaphores?	10M	3	L2

8	Illustrate about paging with neat diagram.	10M	4	L4
	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	L3
10	Illustrate about the various file access methods?	10M	5	L4
	OR			
11	Describe various directory structures in file systems.	10M	5	L2