R20 Regulation *Subject code: 3P3EF*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

OPERATING SYSTEMS

(Common to CSE, CSE(AI&ML) & CSE (DS))

Maximum Marks: 70 Date: 22.06.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 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 (10X2M=20 Marks)		Marks	CO	BTL
1	Write the different operating system structures with neat sketch.	2M	1	L1
2	How does an interrupt differ from a trap?	2M	1	L1
3	Define critical region and monitors.	2M	2	L1
4	What is the classical problem of synchronization	2M	2	L1
5	What are the characteristics of dead lock.	2M	3	L1
6	Define Swapping.	2M	3	L1
7	What do you mean by Thrashing?	2M	4	L1
8	Write about Directory and disk structure.	2M	4	L1
9	Compare Access Control and Access Rights revocation.	2M	5	L1
10	Explain Language based Protection in Operating systems.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Identify the difference between symmetric and asymmetric multiprocessing. Discuss the advantages and disadvantages of multiprocessor systems	10M	1	L2
	OR			
12	Categorize the various types of system calls and explain with examples	10M	1	L2
13	Consider the following set of processes, with the length of the CPU burst time in given ms:	10M	2	L2

Process	P1	P2	P3	P4	P5
Burst Time	8	4	9	5	3
Arrival Time	0	1	2	3	4
Priority	2	1	2	1	3

Draw Gantt charts illustrating the execution of these processes using FCFS, SJF, Priority and RR(Quantum=2ms) scheduling. Also calculate average waiting time and average turnaround time for each scheduling algorithms.

	OR			
14	What is the important feature of critical section? State the Readers Writers problem and give solution using semaphore.	10M	2	L2

15	Analyze the methods of handling deadlocks by prevention, avoidance, detection and recovery.	10M	3	L2
	OR			
16	Explain the difference between segmentation and paging with neat sketch and examples.	10M	3	L2
17	A. Illustrate the concept of copy on write. B. Explain the concept of virtual memory on Windows.	5M 5M	4	L2
	OR			
18	Explain any three-page replacement algorithm with an example. Compare your algorithm with respect to page faults.	10M	4	L2
19	a) Explain about deadlock characterization. b) What are the different methods for handling deadlocks?	5M 5M	5	L2
	OR			
20	What is access matrix? What are various methods to implement it?	10M	5	L2