R20 Regulation *Subject code:3O8BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VIII Semester Supplementary Examinations, November 2025

OPERATING SYSTEMS

(EEE)

Maximum Marks: 70 Date: 25.11.2025 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 which carries 10M.
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	Bloom Tx
1	Differentiate between multi programming and multi-processing.	2M	1	BL2
2	List the goals of an operating system.	2M	1	BL1
3	What are the two separate and potentially independent characteristics embodied in the concept of process?	2M	2	BL1
4	How is preemptive Scheduling different from non-preemptive scheduling?	2M	2	BL2
5	Differentiate between unsafe state and dead lock state.	2M	3	BL2
6	What is critical section problem?	2M	3	BL1
7	What is Virtual Memory?	2M	4	BL1
8	Write the purpose of paging the page table.	2M	4	BL1
9	List the layers of a file system.	2M	5	BL1
10	What is lseek() used for? Give the purpose of read() system call.	2M	5	BL2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
11	Give an account of the different operating system structures with neat sketch.	10M	1	BL3
	OR			
12	Discuss the various types of system calls with examples.	10M	1	BL3
13	a) What are cooperating processes? How do they communicate with each other? Discuss with examples. b) Discuss the various scheduling algorithms used in modern operating systems.	5M 5M	2	BL3
	OR			
14	Discuss how the following pairs of scheduling criteria conflict in certain settings: (i) CPU utilization and response time (ii) Average turn-around time and maximum waiting time (iii) I/O device utilization and CPU utilization.	10M	2	BL4
15	List the conditions that must be present for deadlock to occur and for each condition give brief example or reason that illustrate a disadvantage in preventing the condition.	10M	3	BL4

	OR			
16	Discuss readers/writers problem and give solution by using semaphores where readers have priority.	10M	3	BL3
17	a) What is the need of demand paging? Explain briefly. b) Explain in detail about segmentation with paging technique.	5M 5M	4	BL3
	OR			
18	a) Describe and compare the FIFO, LRU, and Optimal page replacement algorithms. b) Write about Swap space management.	5M 5M	4	BL4
19	a) What is a Directory? Write short note on Directory implementation. b) Explain about linked allocation method of a file.	5M 5M	5	BL3
	OR			
20	Explain in detail about file system structure and free space management with example.	10M	5	BL3