R22 Regulation *Subject code:4E3HB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

COMPUTER ORGANIZATION & OPERATING SYSTEMS

(CSE(DS))

Maximum Marks: 60 Date:20.06.2026 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 a Multiprocessor System.	1M	1	1
b)	What is Register Transfer Language (RTL)?	1M	1	2
c)	Define Micro-operations.	1M	2	1
d)	What is an Instruction Format?	1M	2	1
e)	Define ROM.	1M	3	1
f)	What is Cache Hit and Cache Miss?	1M	3	2
g)	What is an Interrupt?	1M	4	1
h)	Define USB.	1M	4	1
i)	What is an Operating System Service?	1M	5	2
j)	Define Demand Paging	1M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Explain in detail about different computer types and their characteristics. b) Describe arithmetic operations with examples.	5M 5M	1	2 3
	OR			
3	a) Discuss memory-reference instructions with suitable examples. b) Explain different bus structures used in computer systems.	5M 5M	1	3 2
4	a) Explain Hardwired Control Unit with necessary diagrams. b) Describe the organization of semiconductor RAM and ROM.	5M 5M	2	3 2
	OR			
5	a) Write about microprogram examples and explain the concept of control memory. b) Discuss secondary storage and explain different RAID levels.	5M 5M	2	3 4

6	a) Explain the types of peripheral devices and I/O interfaces. b) Discuss serial communication and explain RS-232 standards.	5M 5M	3	2 3
	OR			
7	a) Explain Direct Memory Access (DMA) in detail with block diagram. b) Describe PCI bus and its features.	5M 5M	3	3
8	Discuss Deadlock in detail. Explain deadlock characterization and describe various techniques for deadlock prevention, avoidance, detection, and recovery.	10M	4	4
	OR			
9	Explain the different CPU Scheduling algorithms such as FCFS, SJF, Priority, and Round Robin.	10M	4	4
10	Explain segmentation and paging with hardware support.	10M	5	3
	OR			
11	Describe file system implementation techniques. Explain directory implementation, disk allocation methods, and free-space management in detail.	10M	5	4