R22 Regulation *Subject code: 4P5DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Regular/Supplementary Examinations, November 2025

DATA COMMUNICATIONS AND COMPUTER NETWORKS

(ECE)

Maximum Marks: 60 Date:10.11.2025 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)	Define data communication and its components.	1M	1	L1
b)	Differentiate between analog and digital signals.	1M	1	L2
c)	What is framing in Data Link Layer?	1M	2	L1
d)	Write the function of Cyclic Redundancy Check (CRC).	1M	2	L2
e)	What is routing? List any two routing algorithms.	1M	3	L1
f)	Define IPv4 addressing and its structure.	1M	3	L2
g)	Differentiate between TCP and UDP.	1M	4	L2
h)	What are congestion control techniques?	1M	4	L2
i)	Define DNS and its role in networks.	1M	5	L1
j)	What is symmetric and asymmetric encryption?	1M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Explain the OSI model in detail with its layers and functions.	10M	1	L2
	OR			
3	Describe TCP/IP model and compare it with OSI model.	10M	1	L2
4	Explain various error detection and correction techniques used in Data Link Layer.	10M	2	L2
	OR			
5	Discuss multiple access protocols with examples: ALOHA, CSMA/CD, and Channelization.	10M	2	L2
6	Explain IP addressing, forwarding, and the concept of subnetting.	10M	3	L2
	OR			
7	Describe the functions of routers and explain routing algorithms with examples.	10M	3	L2

8	Explain TCP connection establishment and termination with a neat diagram.	10M	4	L2
	OR			
9	Discuss flow control and congestion control mechanisms in TCP protocol.	10M	4	L3
10	Explain DNS architecture and working principles with examples.	10M	5	L3
	OR			
11	Discuss FTP and SMTP protocols and their functionalities.	10M	5	L3