R22 Regulation *Subject code:4P5DB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, April 2026

DATA COMMUNICATIONS AND COMPUTER NETWORKS (ECE)

Maximum Marks: 60 Date:22.04.2026 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)	List and explain the types of networks based on geographical area.	1M	1	L1
b)	What are the main functions of Data Link Layer?	1M	1	L1
c)	Explain the concept of parity check with example.	1M	2	L2
d)	Explain the purpose of HDLC protocol?	1M	2	L2
e)	Differentiate between virtual circuit and datagram networks.	1M	3	L2
f)	What are the services provided by the Transport Layer?	1M	3	L2
g)	Explain Go-Back-N protocol.	1M	4	L2
h)	What is congestion? List any two causes.	1M	4	L1
i)	Define SMTP and its purpose.	1M	5	L1
j)	What is AES? Why is it used in data security?	1M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Explain the fundamental components of data communication system with diagram.	10M	1	L2
	OR			
3	Discuss the role of protocols and standards in data communication networks.	10M	1	L2
4	Explain various framing methods and flow control mechanisms in data link layer.	10M	2	L2
	OR			
5	Describe IEEE 802.11 MAC protocol and its frame format.	10M	2	L3
6	Discuss IPv6 packet structure and advantages over IPv4.	10M	3	L3
	OR			
7	Explain routing in the Internet and the role of ICMP protocol.	10M	3	L2
8	Explain UDP in detail and differentiate it from TCP.	10M	4	L2

	OR			
9	Describe TCP congestion control approaches and their working principles.	10M	4	L3
10	Explain the working of DNS and describe various DNS records.	10M	5	L2
	OR			
11	Discuss symmetric-key and asymmetric-key cryptography with examples.	10M	5	L3