R22 Regulation *Subject code: 4E3EE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

COMPUTER NETWORKS

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

Maximum Marks: 60 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 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
1a)	Why protocols are needed?	1M	1	L1
b)	What are the draw backs of LAN?	1M	1	L1
c)	What are the responsibilities of data link layer?	1M	2	L1
d)	List the MAC sub layers of IEEE 802.11	1M	2	L1
e)	What is the optimality principle in routing?	1M	3	L1
f)	Why is connection setup required in a Virtual Circuit network?	1M	3	L1
g)	List out the services provided by network layer to the transport layer.	1M	4	L1
h)	What is reliability in transport services?	1M	4	L1
i)	What is fully qualified Domain Name?	1M	5	L1
j)	State the Purpose of SNMP	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Discuss various types of networks topologies in computer network. Also discuss various advantages and disadvantages of each topology. b) Encode the following message sequence by using hamming code with even parity. Message sequence:1101	5M 5M	1 1	L2 L3
	OR			
3	a) Describe the process of encapsulation and de-capsulation with the help of OSI model. b) Which of the OSI layers handles each of the following: i)Dividing the transmitted bit stream into frames ii)Determining which route through the subnet to use	5M 5M	1 1	L2 L2

4	a) Explain the Slotted ALOHA protocol operation with neat diagram. b) Fast Ethernet has the same 64 Byte minimum frame size but can get bits out ten times faster. How is it possible to maintain the same minimum frame size? How much bandwidth loss will occur in this case?	5M 5M	2 2	L2 L3
	OR			
5	a) Describe the advantage of framing with the help of neat diagram explain byte or character stuffing. b) Discuss five reasons why networks might use an error correcting code instead of error detection and retransimission.	5M 5M	2 2	L2 L2
6	a) Illustrate about the shortest path routing Dijkstra's algorithm with suitable example in context of computer networking. b) Explain the design philosophy of the Network Layer on the internet, focusing on its best-effort, connectionless nature.	5M 5M	3 3	L3 L2
	OR			
7	a) What is flooding in routing? Explain the working principle, advantages, disadvantages, and methods used to control flooding. Discuss scenarios where flooding is still used in modern internetworks. b) Explain the concept and purpose of Multicast Routing. How does it achieve a balance between unicast and broadcast communication?	5M 5M	3 3	L2 L2
8	a) How a connection is established in a Transport Protocol. Explain three protocol scenarios for establishing a connection. b) Is it possible from an application to enjoy reliable data transfer even when the application runs over UDP? If so how?	5M 5M	4 4	L2 L3
	OR			
9	a) Discuss the services provided by UDP protocol. Give the header format of UDP. b) Compare TCP and UDP based on reliability, connection setup, congestion control, error handling, speed, and typical use cases.	5M 5M	4 4	L2 L4
10	a) Explain the DNS name space supported components and its functionality in brief? b) List and explain the five basic functions supported by E-mails.	5M 5M	5 5	L2 L2
	OR			
11	a) Explain MIME header contents and its uses b) Describe the addressing system used by simple mail transfer protocol.	5M 5M	5 5	L2 L2