

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3150710

Date: 09/06/2026

Subject Name: Computer Networks

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**
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- Q.1** (a) What is client-server architecture? List its applications on the Internet. **03**
(b) Illustrate the working of the SMTP protocol with a simple example. **04**
(c) Explain the OSI model in detail and compare it with the TCP/IP model. **07**
- Q.2** (a) Define network topology. Explain star topology in detail. **03**
(b) How TCP estimates RTT (Round Trip Time)? **04**
(c) Explain the formats of HTTP request and HTTP response messages. **07**
- OR
- Q.2** (c) Explain various services provided by DNS. **07**
- Q.3** (a) Describe Hierarchical Routing. **03**
(b) Differentiate network edge and network core. **04**
(c) Explain Parity Checks and CRC with simple examples. **07**
- OR
- Q.3** (a) Describe the internal hardware structure of a router. **03**
(b) Differentiate nodal processing delay, queuing delay, transmission delay and propagation delay. **04**
(c) Explain CSMA/CD protocol. **07**
- Q.4** (a) What is fragmentation in IP? Explain briefly. **03**
(b) What is Slotted ALOHA? How it differs from Pure ALOHA? **04**
(c) Explain how TCP handles flow control and congestion control. **07**
- OR
- Q.4** (a) What is hop count? Explain its role in routing. **03**
(b) What is VLAN? Explain its advantages and working. **04**
(c) Explain the concept of multiplexing and demultiplexing by TCP in detail. **07**
- Q.5** (a) RIP is Intra-AS Routing protocol in the Internet. True or False? Justify your answer. **03**
(b) Discuss the applications of UDP. **04**
(c) Write a short note on IP addressing and forwarding. **07**

OR

- Q.5**
- (a)** In Datagram Networks, packets sent from one end system to another may follow different paths through the network and may arrive out of order. True or False? Justify your answer. **03**
 - (b)** Discuss three-way handshaking process in TCP. **04**
 - (c)** Write a short note on Broadcast and Multicast routing. **07**
