# GUJARAT TECHNOLOGICAL UNIVERSITY
## BE - SEMESTER–V EXAMINATION – SUMMER 2025

**Subject Code:3150710**                                    **Date:17-05-2025**

**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.**

| | | | MARKS |
|---|---|---|---|
| **Q.1** | **(a)** | What is packet switching network? How does it differ from packet switching? | **03** |
| | **(b)** | What is topology in compute network? Differentiate star topology from mesh topology. | **04** |
| | **(c)** | Why OSI reference model is known as the layer architecture? What are the functions of layers of OSI reference model? | **07** |
| | | | |
| **Q.2** | **(a)** | Explain IMAP Protocol for email communication. | **03** |
| | **(b)** | What is congestion control? How does it differ from flow control? | **04** |
| | **(c)** | Describe HTTP request and response message format in brief. | **07** |
| | | **OR** | |
| | **(c)** | What is DNS? How does DNS work? Explain the hierarchy of DNS servers. | **07** |
| **Q.3** | **(a)** | What is port address in transport layer? How does it help in Process-to-process delivery at transport layer? | **03** |
| | **(b)** | How does congestion impact network performance, and what metrics are used to detect congestion? | **04** |
| | **(c)** | Explain the following system calls: socket(), bind(), listen(), accept(), connect(), send(), recv() ? | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | What is connection-less service? How does packet delivery connection-less services does differ from connection-oriented services? | **03** |
| | **(b)** | Describe the process of establishing a TCP connection using the three-way handshake. | **04** |
| | **(c)** | Explain the various fields of UDP header. What are the advantages and disadvantages of UDP over TCP? | **07** |
| **Q.4** | **(a)** | How many maximum number of hosts can be connected in a single class B and C network? | **03** |
| | **(b)** | Differentiate multicasting and broadcasting. | **04** |
| | **(c)** | How routing table is built in link state routing protocol? Explain the steps in detail with figure and example. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | How physical addresses are different from logical addresses? | **03** |
| | **(b)** | What is subnetting? What is the subnet masks values for creating 4 and 8 subnets in class c network? | **04** |
| | **(c)** | How the vector of distance for each router is built in distance vector routing protocol? What is count-to-infinity problem in it? | **07** |
| **Q.5** | **(a)** | Differentiate fix size and variable size framing. | **03** |
| | **(b)** | What is flow control? How stop-n-wait protocol does work for flow control? | **04** |

**(c)** Explain selective repeat protocol with the concept of sliding window. **07**

<div align="center">OR</div>

**Q.5** **(a)** What is piggybacking in flow control? **03**

**(b)** A bit stream 10011101 is transmitted using standard CRC Method. The divisor is 1001. Show the CRC codeword is generated at sender side. **04**

**(c)** What is collision? How collision can be avoided using bit-map protocol? Explain with example. **07**

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