# GUJARAT TECHNOLOGICAL UNIVERSITY
## Bachelor of Vocation - SEMESTER - VI EXAMINATION - WINTER 2025

**Subject Code: 21160203**                                          **Date: 15-11-2025**

**Subject Name:  Computer Network Security**

**Time: 02:30 PM TO 04:30 PM**                                     **Total Marks: 50**

**Instructions**
**1. Attempt all questions.**
**2. Make Suitable assumptions wherever necessary.**
**3. Figures to the right indicate full marks.**
**4. Use of simple calculators and non-programmable scientific calculators are permitted.**

|  |  |  | Marks |
|---|---|---|---|
| **Q.1** | **(a)** | Describe the various network types, including personal, local, metropolitan, and wide area networks. | **05** |
|  | **(b)** | In what contexts are HTTP, HTTPS, and SMTP protocols typically applied? | **05** |
| **Q.2** | **(a)** | How is the OSI model structured in contrast to the TCP/IP model? | **05** |
|  | **(b)** | How do different network devices—hubs, switches, routers, and others—contribute to data communication? | **05** |
|  |  | **OR** |  |
|  | **(b)** | What are the characteristics of Ethernet in half-duplex and full-duplex configurations? | **05** |
| **Q.3** | **(a)** | In Layer-2 networking, how is switching handled and how do switches track connected devices? | **05** |
|  | **(b)** | Can you explain the purpose and working of the Spanning-Tree Protocol (STP)? | **05** |
|  |  | **OR** |  |
|  | **(a)** | How are IP, ICMP, ARP, and RARP used for addressing and messaging in a network? | **05** |
|  | **(b)** | Explain how IP addresses are divided into classes and how subletting is used for efficient addressing. | **05** |
| **Q.4** | **(a)** | What are the advantages of IPv6 over IPv4? | **05** |
|  | **(b)** | What are the fundamental procedures for router configuration? | **05** |
|  |  | **OR** |  |
|  | **(a)** | How does a Virtual LAN improve network organization and performance? | **05** |
|  | **(b)** | What are the core duties of the transport layer in network communication? | **05** |
| **Q.5** | **(a)** | What is the difference between HTTPS, TLS, and SSH in securing internet communication? | **05** |
|  | **(b)** | How do symmetric cipher modes function in data encryption? | **05** |
|  |  | **OR** |  |

**(a)** How is cryptanalysis used to break cryptographic systems, and what are the common attack methods?  **05**

**(b)** Describe the RSA algorithm and its application in securing digital communication.  **05**

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