

B. TECH
(SEM VII) THEORY EXAMINATION 2022-23
DATA COMMUNICATION NETWORKS

Time: 3 Hours**Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 7 = 14**

- a. Identify the five components of a data communications system.
- b. List the various components of protocol.
- c. Examine in which layer and why error detection and correction are required.
- d. Illustrate the frame format of IEEE standards 802 for LAN.
- e. Illustrate the difference between Fast Ethernet and Standard Ethernet.
- f. Outline the difference between TCP and UDP protocol.
- g. Develop an idea of security services.

SECTION B**2. Attempt any three of the following: 7 x 3 = 21**

- a. Explain the types of addressing. Give some examples of port address.
- b. Illustrate the concept of framing. Demonstrate bit-oriented framing and character-oriented framing.
- c. Describe the working principle and architecture of Bluetooth IEEE 802.16 Standard.
- d. Give a detailed description on TCP Segment Header and TCP connection management.
- e. Describe the working of Asymmetric and Symmetric Key Cryptography using suitable diagrams.

SECTION C**3. Attempt any one part of the following: 7 x 1 = 7**

- a. List the difference between TCP/IP and OSI model on the basis of services, protocols and interfaces.
- b. Describe layered architecture. Also, describe the role of each layer in OSI Model.

4. Attempt any one part of the following: 7 x 1 = 7

- a. Illustrate the different types of error detection methods. Demonstrate the CRC error detection technique using generator polynomial $X^4 + X^3 + 1$ and data 11100011.
- b. Compare the reason for moving from stop-and-wait ARQ protocol to the go-back-NARQ protocol.

5. Attempt any one part of the following: 7 x 1 = 7

- a. Explain Controlled access methods and also discuss CSMA/CD in detail.
- b. Discuss the various IEEE standards used for Networking? Explain IEEE standard 802 for LAN.

6. Attempt any one part of the following: 7 x 1 = 7

- a. Describe ATM. Explain cell header format in ATM and briefly describe the four service classes of ATM.
- b. Describe IPv4 datagram format.

7. Attempt any one part of the following: 7 x 1 = 7

- a. Summarize the function of SMTP. Also, compare between a user agent (UA) and mail transfer agent.
- b. Analyze Data encryption standard (DES) of Modern round Cipher.