

**VIT**Vellore Institute of Technology
Pursuing the frontiers of knowledge**Slot : B2+TB2****School of Computer Science Engineering and Information Systems****Fall Semester 2024-2025****Continuous Assessment Test – I****Programme Name & Branch : BTech(IT)****Course Name & code: Computer Networks/BITE305L****Class Number (s): VL2024250103364, VL2024250103358, VL2024250103370****Faculty Name (s) : Dr.Rahamathunnisa.U, Dr.Vani M.P, Dr.Navaneethan.C****Exam Duration: 90 Min.****Maximum Marks: 50****Answer All the Questions****5*10=50 Marks**

1. Assume that a private internet requires that the messages at the application layer be encrypted and decrypted for security purposes. If we need to add some information about the encryption/decryption process such as the algorithms used in the process, does it mean that we are adding one layer to the TCP/IP protocol suite? Suggest and redraw suitable TCP/IP layers for the same.

2. Standards are the set of rules for data communication that are needed for the exchange of information among devices. Demonstrate any five standards that facilitates the data communication process.

3. A path in a digital circuit-switched network has a data rate of 1 Mbps. The exchange of 1000 bits is required for the setup and teardown phases. The distance between two parties is 2000 km. Answer the following questions if the propagation speed is 2×10^8 m:

a. What is the total delay if 100,000 bits of data are exchanged during the data transfer phase?

b. Find the delay per 10000 bits of data for the above case and explain your observation.

4. a. Signals travel through transmission media, which are not perfect. Mention the causes for the imperfection which causes signal impairment. [5Marks]

b. Consider a channel with a 1-MHz bandwidth. The SNR for this channel is 63. What are the appropriate bit rate and signal level? [5 Marks]

5. a. What are the propagation time and the transmission time for a 5-Mbyte message (an image) if the bandwidth of the network is 1 Mbps? Assume that the distance between the sender and the receiver is 12,000 km and that light travels at 2.4×10^8 m/s. [5Marks]

b. Design a three-stage 200×200 switch using the Clos criteria with a minimum number of cross points. [5Marks]

