



School of Computer Science and Engineering

Fall Semester 2024-2025

Continuous Assessment Test – I

Programme Name & Branch: B.Tech. CSE (All Programs) SLOT: D2+TD2

Course Code & Name: BCSE308L- Computer Networks

Class Numbers: Common to All Batches

Faculty Names: Common to All Batches

Exam Duration: 90 Min.

Maximum Marks: 50

Answer all the questions

Q.No.	Question	Max Marks
1.	<p>a. A defence organization is planning to have the network built for their newly constructed office. There are 3 scientists working on confidential projects. Each scientist has a team of 5 engineers. Sketch a suitable topology with justification. (5 marks)</p> <p>b. A company is hiring freshers to work on the Application layer and Transport layer. Identify any 4 protocols with their purpose, which the candidate has to be familiar to be eligible for the job. (5 marks)</p>	10
2.	<p>i. A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network? (2 Marks).</p> <p>ii. What are the propagation time and the transmission time for a 2.5-kbyte message (an e-mail) if the bandwidth of the network is 1 Gbps? Assume that the distance between the sender and the receiver is 12,000 km and that light travels at 3×10^8 m/s. (3 Marks)</p> <p>iii. A path in a digital circuit-switched network has a data rate of 1 Gbps. The exchange of 1000 bits is required for the setup and teardown phases. The distance between two parties is 5000 km. Answer the following questions if the propagation speed is 2×10^8 m. What is the total delay if 10000 bits of data are exchanged during the data-transfer phase? (5 marks)</p>	10

3.	Relevant points substantiate the need for switching techniques in data communication. With a neat diagram, discuss the workings of packet switching approaches. (2+4+4 marks)	10
4.	<p>a) What kind of error is undetectable by the checksum illustrate with an example? (3 Marks)</p> <p>b) Given the data word 1111011111 and the divisor 11011,</p> <p>i. Show the generation of the code word at the sender site (using binary division). (4 Marks)</p> <p>ii. Show the checking of the code word at the receiver site (assume no error). (3 Marks)</p>	10
5.	<p>The source wants to transmit the message $M = 11010110001$ to the receiver over a noisy channel. Assume sixth bit is flipped during the transmission.</p> <p>a. Show the code generation at sender side (4 marks)</p> <p>b. Show how does the receiver find whether the received code word has error or not. (4 marks)</p> <p>c. What kinds of errors it cannot determine? Why and justify. (2 marks)</p>	10

***** All the Best*****