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FIRST SEMESTER [MCA] Internal Examination, December 2022

| Paper Code: MCA-103	Subject: Computer Networks
Time: 2 Hours	Maximum Marks: 45

Note: Attempt THREE questions in all. Question No. 1 is compulsory, and attempt any two sections.

1. Answer all the following questions briefly: -   1.5 × 10 = 15

   (a) Difference between Bandwidth and Throughput.   CO1

   (b) Explain the difference between node-to-node delivery and source-to-destination delivery?   CO2

   (c) A network uses Mesh topology to connect n computers. Estimate the total no of connections in the network.   CO2

   (d) Explain Unicasting, Multicasting and Broadcasting?   CO1

   (e) Consider following network. Calculate the throughput of the network.   CO1
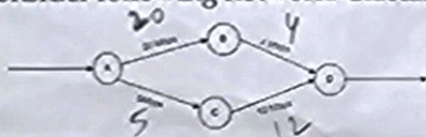
   (f) Explain Noise, Attenuation and Distortion.   CO1

   (g) Discuss the point to point and multipoint line configuration.   CO1

   (h) Differentiate between LAN and WAN.   CO2

   (i) Compare and contrast between Hub and Switches.   CO2

   (j) Compare and contrast between Star topology and Bus topology.   CO2

Section - I

2. (a) Compare the layers of OSI Model and TCP/IP Model. Explain the responsibility of each layer.   5   CO2

   (b) Explain the architecture of Optical Fiber? What are the different types of propagation modes in optical fiber?   5   CO1

   (c) What are the different types of Satellites available in the orbit? Compare them.   5   CO1

Section - II

3. (a) The initial SNR measured at the transmitter was 20 dB. In order to combat the channel conditions, the signal power was doubled prior to transmission. What is the new SNR at the transmitter?   5   CO1

   (b) Suppose an unfortunate situation. A city has hit by an earthquake. We have to establish a network immediately. What type of communication media would you suggest? Justify your answer.   5   CO2

   (c) Construct the NRZ-I, NRZ-L, encoding of the digital data: 0011010101000111.   5   CO1

Section - III

4. (a) Assume signals travel over each link at a speed of 10^8 meters per second. 5 CO1
Assume that the link bandwidth on each link is 1Mbps. Find the total
transmission and propagation delay to send 1000 bits from S to D?
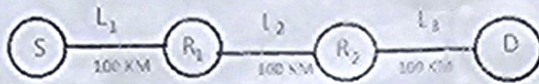
(b) Explain unipolar line encoding system. Construct the encoding of digital data 5 CO1
101110011. Discuss the problems with unipolar line encoding system.

(c) Suppose, you have to design a network for a company. The company has 5 CO2
different offices in the different location in a city. Design a topology. Also
explain the media you would advise and why?