# National Institute of Technology, Delhi

| Name of the Examination: Mid Semester Examination (07/03/2022) | | | |
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| Branch | : B. Tech. (ECE) | Semester | : 6 |
| Title of the Course | : Computer Networks | Course Code | : CSB 342 |
| Time | : 1.5 Hours | Maximum Marks | : 25 |

- All questions are compulsory.
- All questions should be answered in the same sequence as mentioned in the paper: You have to answer Q1 first, then Q2, so on, and finally Q 8. ELSE QUESTION SHALL NOT BE EVALUATED.

**Q1.** Suppose that instead of using 16 bits for network part of a class B Address, 20 bits have been used. How many class B networks would have been possible? **[2]**

**Q2.** If the baud rate over a channel is 4800 bauds/s, and there are 8 different symbols possible. What is the minimum bit rate possible for such transmission? **[2]**

**Q3.** Let us consider a arbitrary layered architecture with N layers. If m is the message that should be transmitted and H is the header that is added at every layer. Calculate the fraction of data in the whole content that is transmitted. **[3]**

**Q4.** A ring topology has the following parameters. The length of ring is 300m, bandwidth of the ring is 4 Mb/s, and number of stations are 25. Each station/interface offers 1 bit delay. **[3]**
Find the ring latency of this network.

**Q5.** Differentiate between circuit and the packet switching. Also explain why these techniques are required during the data transmission. **[3]**

**Q6.** For Go back N ARQ protocol **[4]**
1) If a 6-bit sequence number is used to represent a frame, then what would be the maximum sender window size and the receiver window size.
2) If maximum sender window size is N, then calculate the number of the sequence bits.

**Q7.** For the following IP Addresses- **[4]**

    a.) 1.2.3.4
    b.) 10.15.20.60
    c.) 130.1.2.3
    d.) 150.0.150.150
    e.) 200.1.10.100
    f.) 220.15.1.10

g.) 250.0.1.2

h.) 300.1.2.3

Identify the Class, Network IP Address, Direct broadcast address and Limited broadcast address of each IP Address.

**Q8.** Let us consider a noisy channel between transmitter and receiver. '0.2' is the probability of frame [4] being lost during transmission through the channel. Calculate the mean number of transmissions required for successful transmission of frame across the channel.