Roll no. .....

National Institute of Technology, Delhi

Name of the Examination: B. Tech. (Mid Sem Exam)

Branch	**: B.Tech (ECE)**	**Semester**	**: VI**
Title of the Course	**: Computer Networks**	**Course Code**	**: CSB 342**

Time: 1 Hours 30 Minutes **Maximum Marks: 25**

- **All questions are compulsory.**
- **All parts of a single question must be answered together and in the same sequence as given in question paper. ELSE QUESTION SHALL NOT BE EVALUATED.**
- **Answers should be CLEAR AND TO THE POINT.**

Q1. A user X has a long message, and it needs to be transmitted reliably with uniform packet delay over the network. Which of the switching technique (among circuit and packet switching) is more suitable for such transmission? Provide suitable justification for your answer. **[3]**

Q2. Let the probability of frame reaching safely from transmitter to receiver is p. Calculate the mean number of transmissions required for the successful transmission of a frame. **[3]**

Q3. Determine which technique among pure and slotted ALOHA is more efficient by calculating their throughput. **[4]**

Q4 Distinguish between persistent and nonpersistent CSMA schemes? **[2]**

Q5. Divide the following mode of transmission into simple, half-duplex and full-duplex mode of communication. **[3]**

i. Mobile Phone Call
ii. Keyboard
iii. Walkie Talkie

Provide suitable justification for your answer.

Q6. i. What is the need of using flow control protocols in data communication? **[1+2+2]**
ii. Describe stop and wait ARQ protocol.
iii. A 5-bit sequence number is used and initial sequence number is '0'. What would be the sequence number for the 100^{th} frame, if we use Go-Back-N ARQ protocol.

Q7. Match the network layer to its description. **[2]**

1. Application	A. Access control and framing
2. Network	B. End-user service like web browsing
3. Data Link	C. Hardware for sending and receiving data
4. Physical	D. Routing and traffic shaping

Q8.

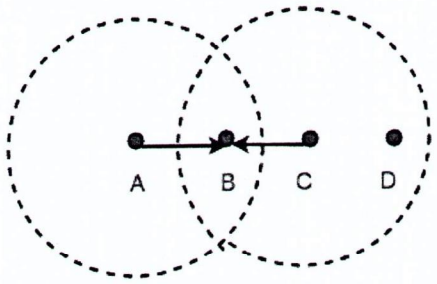

Fig. 1

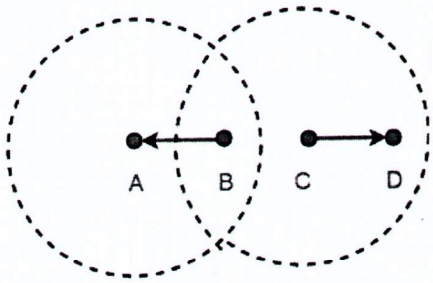

Fig. 2

[1.5+1.5]

Stations A, B, C, and D are wireless stations. The circles with point A and C as centre are the respective ranges of stations A and C. A→B, implies station A is sending data to station B. Describe at least one scenario in both Fig. 1 and 2, where CSMA/CD protocol will fail.