Name: _____ Roll No._____
Section: _____

Computer Networks Midterm-I Exam Total marks: 25
Time allowed: 75 minutes

NOTE: Write **only** in the space provided for the answers.
This exam consists of 6 questions on 3 pages (You can use back side of page 3 for rough work).

Q1. The data link layer can detect errors in transmission channels, why do you think we need another checking mechanism at the transport layer? Now suppose transmission channels become error-free. Is the data link layer still needed? Give two reasons. (2+2)

Q2. Broadcast and point-to-point communication are the two transmission technologies widely used. Which one is used in local area networks and wide area networks and why? (4)

Q3. Is TCP/IP reference model for network architecture a better option than OSI reference model? Give 3 reasons to support your answer. (3)

Q4. OSI and TCP/IP reference models supports both connection-oriented and connection-less communications at network and transport layers. Please state which types of communication are supported in which of the mentioned layers of OSI and TCP/IP reference models. Give one advantage for the OSI and one advantage of TCP/IP way of supporting the connection oriented and connection less communications. (6)

Q5. The channel bandwidth of telephone line is 4 kHz and the maximum noise power measured is 2 mW. If we want to send data at 40kbps, what should be the minimum power of the data signal? (4)

Q6. Propagation time measures the time required for a bit to travel from the sender to the receiver whereas the transmission time measure the time required for a message to be transmitted from the sender (time required to put the complete message on the link). Find 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 the signal travel with speed of light equal to $2.4x10^8$m/s. (2+2)