Total No. of printed pages = 4

2022

MCA

(Theory Paper)

Paper Code : MCA 2.4

(Computer Networks)

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks
for the questions.

1. Answer any *five* from the following questions :

    1×5=5

    (i)   For what purpose UDP connection is used ?

    (ii) Give a difference between simplex and full
          duplex communication.,

    (iii) Mention difference between Physical and
          Logical addresses.

    [Turn over

(iv) Define bandwidth.

(v) What is throughput ?

2. Answer any *five* from the following questions :

$$3 \times 5 = 15$$

(i) State difference between IPv4 and IPv6.

(ii) Define Bit Rate. Assume we need to download text documents at the rate of 100 pages per minute. What is the required bit rate of the channel ?

(iii) Suppose a signal travels through a transmission medium and its power is reduced to one-half. This means that $P_2 = (\frac{1}{2})P_1$. In this case, how the attenuation (loss of power) can be calculated ?

(iv) Explain different types of errors.

(v) Explain Character-Oriented Protocols and Bit-Oriented Protocol.

(vi) Explain the structure of datagram with different fields.

(vii) How ARP is different from RARP ?

3. Answer any *four* from the following questions :

$$4 \times 4 = 16$$

(i) Mention the different types of network topology. Explain any two.

(ii) Discuss the different transmission impairments.

(iii) Define Signal to Noise Ratio (SNR). The power of a signal is 10 mW and the power of the noise is 1μw ; what are the values of SNR and SNR_{dB} ?

(iv) Explain the different modes of data transmission.

(v) Explain Stop-and-Wait Automatic Repeat Request protocol.

4. Answer any *four* from the following questions :

$$6 \times 4 = 24$$

(i) How the different layers of OSI model interact ?

(ii) Discuss between Nyquist Bit Rate and Shannon Capacity.

(iii) Discuss the Pulse Code Modulation with proper diagram.

(iv) Mention the different types of transmission media. Explain how the different types of fiber optic cable work with its performances.

(v) How Coaxial cable is different from twisted pair cable ? Explain their performances.

(vi) Explain how the switch datagram network works with proper diagram.

(vii) Explain how the circuit switch network works with proper diagram.

5. Write short notes on any *three* :   5×3=15

(i) Phishing

(ii) Digital Signature

(iii) Multiplexer and Demultiplexer

(iv) FDM and TDM.