4TH SEM./AE&IE/AI & ML/CS&E./ ETC & COMM. / E&TC/IT./ MEACHTRONICS ./ 2024(S)

Th-2 Data Communication and Computer Network

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
   a. Why we need protocol in data communication.
   b. What are the responsibilities of network layer?
   c. Name different techniques used for Digital to Analog Conversion
   d. Define jitter.
   e. Define piggy backing.
   f. Define congestion.
   g. Mention the function of go-back N-ARQ.
   h. Define transmission impairments.
   i. How many cables required if we are connecting 30 nodes in a mesh topology
   j. Define gateway.

2. Answer **Any Six** Questions 6 x 5
   a. Write down the difference between asynchronous and synchronous transmission
   b. Discuss about different transmission mode.
   c. Discuss about packet switching method.
   d. Discuss about any two networking device.
   e. Discuss about different types of TDM.
   f. Explain Nyquist theorm for channel capacity. Consider a noiseless channel with a bandwidth of 4000 Hz with four signal levels (for each level, we send 2 bits). Calculate the maximum bit rate.
   g Define error and its type. Discuss about checksum error detection method with example.

3 Illustrate Unipolar NRZ, NRZ-L, NRZ-I with example 10

4 Explain briefly about star ring and bus topology used in computer network with their advantages and disadvantages. 10

5 Discuss about OSI model and compare it with TCP/IP model. 10

6 Discuss about different guided transmission medium used in data transmission. 10

7 Write short notes (any two) 10
   i. Fibre channel.
   ii. Stop and wait protocol.
   iii. Ethernet.
   iv. IPV6.