

Computer Networks (KCS-603)

CO Number	Course Outcome
CO1	Define [L1: Remember] different protocols, switching methodology, and communication techniques available for voice and data networks.
CO2	Describe [L2: Understand] different Network Protocols and components of networks.
CO3	Apply [L3: Apply] different methodologies, cryptographic and error handling mechanisms to implement a secure, fast, error-free, and congestion-free network.
CO4	Analyze [L4: Analysis] and measure the performance of different network protocols.

Time: 1.5 Hrs.

M. M. 15

Section A

Q1. Attempt all questions:

(1X3 = 3 Marks)

- a) List three services which are provided by Data Link Layer. CO1
- b) Define Jitter and Accuracy with example. CO1
- c) State Bus and Ring Topologies with proper figures. CO1

Section B

Q2. Attempt all questions:

(2X4 = 8 Marks)

- a i) Describe the usage of Switches and routers in computer networks. CO2
- Or
- ii) Explain the functions of Network layer of the OSI Reference Model. CO2
- b i) Explain Pura ALOHA and identify that maximum throughput is 18.39%. CO2
- Or
- ii) Explain Manchester and the differential Manchester line encoding schemes. Draw Manchester, differential Manchester for given data pattern 10101100111. CO2
- c i) Explain Nyquist theorem to find the capacity of Noiseless channel. CO2
- Or
- ii) Explain Circuit and packet switching with suitable diagram. Also, explain virtual circuit approaches of packet switching. CO2
- d i) Explain Transmission, Propagation, Queuing and Processing Delay in brief with diagram. CO2
- Or
- ii) Describe Time Division Multiplexing (TDM). Also, explain Asynchronous and Synchronous TDM. CO2

### Section C

Q3.

(4X1 = 4 Marks)

- i) Illustrate Bit rate and Baud rate and their relationship. A signal is carrying data in which one data element is encoded as one signal element and bit rate of 200 kbps. What is the average value of baud rate if  $c$  is between 0 and 1. CO3

Or

- ii) Illustrate relationship between SNR and  $\text{SNR}_{\text{dB}}$ . Assume that  $\text{SNR}_{\text{dB}} = 24$  and the channel bandwidth is 4 MHz. Calculate the theoretical capacity of the channel. CO3