EXPLORE INNOVATE EXCEL

Punjab Engineering College
(Deemed to be University), Chandigarh
MID TERM Examination
October 2022

Program: B.Tech	**Year/Semester:** 2022/5th Sem
Course Name: Computer Communication Networks	**Course Code:** EC2212
Maximum Marks: 25	**Time Allowed:** 1hr 30min.

- **All questions are compulsory.**
- **The candidates, before starting to write the solutions, should please check the question paper for any discrepancy and also ensure that they have been delivered the question paper of right course code.**
- **The Candidate should clearly mention his name-sid- course name – course code- date and sign at the top of first page.**

S.No.		Questions	Marks
1	(a)	Write the comparative benefits offered by Star Topology over Meshed Topology.	3
	(b)	Conclude the significance of a bus topology in the design process of a Computer Communication Network	2
2	(a)	Discuss the importance of switching techniques used in a Computer Communication Network?	2
	(b)	Compare the switching techniques employed in a Telephone network and an Internet network.	3
3	(a)	Name the layers of the OSI Reference Model and TCP/IP protocol suite which incorporate the port address, IP address and MAC address to the data.	3
	(b)	How would you find out the IP and MAC addresses for your device?	2
4	(a)	Consider a noiseless channel with a bandwidth of 20KHz. We need to send 280 kbps over a channel. How many signal levels are required	2
	(b)	Differentiate between NRZ and RZ line coding techniques with proper diagrams.	3
5		Write the steps implanted in Selective Repeat ARQ and summarize the reasons for preferring Selective repeat ARQ over Stop and Wait ARQ	5

PUNJAB ENGINEERING COLLEGE
(Deemed to be University)
End-Term Examination, December 2022

Programme: **B. Tech (ECE)** Year/Semester: **Third/1st**
Course Name: **COMPUTER COMMUNICATION NETWORKS** Course Code: **EC 2212**
Maximum Marks: **50** Time allowed: **3 hr**

Notes:

1. All questions are compulsory.
2. Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state, additional data required, if any.
3. The candidates, before starting to write the solutions, should please check the question paper for any discrepancy, and ensure that they have been delivered the question paper of right course code.

Q. No	Questions	Marks
1 a)	Categorize the four basic topologies in terms of line configuration. Also, Discuss the advantages and disadvantages of Ring topology.	2
b)	What are the three criteria necessary for an effective and efficient network?	2
c)	Assume that SNR is 36 dB and bandwidth of the channel is 2 MHz. Calculate the channel capacity.	2
2 a)	List the layers of the OSI internet model. What are the responsibilities and addressing mode of each layer?	4
b)	Differentiate between two different types of packet switching approaches.	2
3 a)	Explain the Manchester and Differential Manchester line coding scheme.	2
b)	What is Cyclic Redundancy Check? Decode the CRC (cyclic redundancy code) code-word 1011110 assuming the divisor 1011 and last three bits as redundant bits. What is syndrome value? Will the data word be accepted or discarded at the receiver.	3
c)	Describe Classful Addressing and how the address space is divided in this approach? What are the classes for IP addresses (i) 14.23.120.8 and (ii) 252.5.15.111.	2
4 a)	Differentiate between Frequency division multiplexing (FDM) and Frequency hopped spread spectrum (FHSS) with proper diagrams.	2
b)	Classify the different types of transmission media used in communication networks.	2
c)	What do you mean by Hamming distance in block codes?	1
5 a)	What is channelization? Discuss three channelization protocols: FDMA, TDMA, and CDMA with illustrations.	3
b)	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the requirement to make this frame collision-free?	1

c)	Justify why collision is an issue in a random access protocol but not in controlled access or channelizing protocols.	1
6 a)	Differentiate between unicast, multicast and broadcast routing protocols and illustrate the same using diagrams. How multicasting is different from the multiple unicasting protocol.	3
b)	List five connecting devices used for connecting LANs, or segments of LANs (Specifically mention the layer at which these connecting device are used). What is the difference in functionality between a bridge and a repeater?	3
7 a)	Explain Internetworking Protocol (IP) and Internet Control Message Protocol (ICMP).	2
b)	The network layer handles the delivery of a packet. This is accomplished by using two different methods of delivery. Name those two methods of delivery and with illustrations differentiate between them.	2
8 a)	Define subnetting?	1
b)	Compare UDP (User Datagram Protocol) and TCP (Transmission Control Protocol) transport layer protocols.	2
c)	How are congestion control and quality of service related? What is the difference between open-loop congestion control and closed-loop congestion control?	2
d)	Name any two general techniques to improve quality of service?	1
9 a)	Categorize the three domains of the domain name space?	2
b)	Classify the main components of the general architecture of an e-mail system. Sketch an email architecture considering the sender and the receiver of an e-mail are on different systems.	3