

Model Question Paper-1 with effect from 2018-19 (CBCS Scheme)

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Fourth Semester B.E. Degree Examination Data Communication

TIME: 03 Hours

Max. Marks: 100

Note: Answer any five full question, choosing ONE full question from each module

<i>Questions</i>			*Bloom's Taxonomy Level	Marks
Module -1				
Q.01	a	Define Data Communication. Mention its basic components.	L1	05
	b	Distinguish TCP/IP from OSI Model	L3	05
	c	What are the functions of a) Data Link Layer, b) Network Layer and c) Transport Layer	L2	10
OR				
Q.02	a	Distinguish a) Data from Information and b) Analog signal from Digital signal	L2	04
	b	Design a Mesh Topology for 5-nodes. Derive the number of <i>Links</i> required for 7-nodes Mesh network and write its disadvantages	L3, L4	06
	c	What is the significance of Nyquist & Shannon Theorems? If a channel has a Bandwidth of 1 MHz. The SNR of channel is 64. Determine the appropriate bit rate and signal levels required?	L2, L3	10
Module-2				
Q. 03	a	What are the basic Goals of designing Line Code? Explain	L1	04
	b	Draw Manchester & Differential Manchester Line Code for 11001010, Mention its Advantages & Disadvantages	L2,L1	10
	c	What are the steps involved in Pulse Code Modulation? Describe Quantization with an example	L1, L2	08
OR				
Q.04	a	What are the different modes of data transmission? Discuss Serial transmission.	L1,L2	08
	b	How does Digital data is converted into Analog? Discuss Phase Shift Keying.	L2	06
	c	An available bandwidth of 100 kHz which spans from 200 to 300 kHz. What are the carrier frequency and the bit rate if we modulated our data by using ASK with $d = 1$?	L1	06

Module-3				
Q. 05	a	Why is signal Multiplexing required? Which are the Analog & Digital Multiplexing? Discuss any one technique.	L1,L2	08
	b	What is significance of Spread spectrums? Discuss FHSS.	L2	08
	c	Compare and Contrast Circuit switching with Packet Switching.	L2	04
OR				
Q. 06	a	What are different types of Errors in data transmission? Discuss single bit error detection technique.	L1,L2	08
	b	What is the special property of Cyclic code? Design encoder and decoder for the data 1001 and Divisor 1011.	L2	08
	c	What is Hamming Distance? What is its significance in Error detection? Write an example of finding Hamming distance.	L1	04
Module-4				
Q. 07	a	Distinguish between Point to Point link and Broadcast link.	L1	04
	b	What are the basic services of Data link layer? Discuss	L2	06
	c	What is the need of Bit & Byte stuffing at DLL? Explain them with examples	L2	10
OR				
Q. 08	a	Write the structure of HDLC frames. Discuss control field of S-frame	L1	04
	b	What is the Taxonomy of MAC protocols? Discuss CSMA/CD protocol.	L3	08
	c	Discuss a) IPv4 addressing Scheme and b) DHCP	L2	08
Module-5				
Q. 09	a	Compare HDLC frame with LLC&MAC frames.	L2	06
	b	Discuss the structure of 802.3MAC Frame.	L2	06
	c	How Bridge network improves DLL performance? What are Goals of Fast Ethernet?	L1	08
OR				
Q. 10	a	Discuss Hidden and Exposed node problem in 802.11.	L2	08
	b	What is the architecture of Bluetooth? Explain its frame.	L2	08
	c	Write a note on Cellular Telephony	L1	04

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.