AR 19

GIET UNIVERSITY, GUNUPUR – 765022
B. Tech (Seventh Semester – Regular) Examinations, November – 2022
BPEEC7010 - Data Communications and Networking
(ECE)

Time: 3 hrs   Maximum: 70 Marks

Answer ALL Questions
The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions   [CO#]   [PO#]

a. In a ___ topology, if there are n devices in a network, each device has n-1 ports for cable.   CO1   PO2
(i)	Bus	(ii)	Mesh
(iii)	Ring	(iv)	Star

b. Demodulation is the process of: CO1   PO1
(i)	Dividing the high-speed signals into frequency bands	(ii)	Converting digital signals to analog signals
(iii)	Converting analog signals to digital signals	(iv)	Combining many low-speed channels into one high speed channel

c. Two or more than two computers connected to each other for sharing an information forms a___.   CO1   PO2
(i)	network	(ii)	router
(iii)	server	(iv)	none of these

d. Which layer is used to link the network support layers and user support layers?   CO1   PO2
(i)	session layer	(ii)	data link layer
(iii)	transport layer	(iv)	network layer

e. What is the frequency range of UTP cable?   CO2   PO1
(i)	100MHz to 5MHz	(ii)	100Hz to 5Hz
(iii)	100Hz to 5MHz	(iv)	1000Hz to 5MHz

f. The sharing of a medium and its link by two or more devices is called _____.   CO2   PO1
(i)	modulation	(ii)	multiplexing
(iii)	encoding	(iv)	line discipline

g. 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?   CO1   PO2
(i)	2msec	(ii)	4msec
(iii)	2sec	(iv)	4sec

h. In Go-Back-N ARQ, if frames 4, 5, and 6 are received successfully, the receiver may send an ACK _____ to the sender.   CO2   PO2
(i)	6	(ii)	7
(iii)	5	(iv)	any of the above

i. Why do we require hamming codes?   CO1   PO1
(i)	Error correction	(ii)	Encryption only
(iii)	Decryption	(iv)	Bit stuffing

j. Block length is the _____ in the code word.   CO1   PO1
(i)	Number of elements	(ii)	Distance between elements
(iii)	Number of parity bits	(iv)	None of the mentioned

PART – B: (Short Answer Questions)   (2 x 10 = 20 Marks)

Q.2. Answer *ALL* questions   [CO#]   [PO#]

a.	What are the four fundamental characteristics on which data communication depends?	CO1	PO1
b.	What is the purpose of Network allocation vector (NAV) in wireless LAN?	CO2	PO1
c.	Define block coding with a suitable example.	CO2	PO2
d.	What are the responsibilities of the data link layer in the Internet model?	CO1	PO2
e.	If data is 0110111111111100 what is the transmitted data and if received data is 01111110000111011111011111011001111110. What is the actual data in HDLC framing?	CO2	PO2
f.	What is the purpose of cladding in an optical fibre?	CO2	PO1

g.	Define the type of the following destination addresses:
	   i. 4A: 30: 10: 21:10:1A
	   ii. 47:20:1B:2E:08:EE
	   iii. FF: FF: FF: FF: FF: FF
		CO2	PO1

h.	What is the MAC format?	CO1	PO1
i.	What is difference between CSMA/CD and CSMA/CA?	CO2	PO2
j.	What is meant by piggybacking in data communication?	CO1	PO1

PART – C: (Long Answer Questions)   (10 x 4 = 40 Marks)

Answer *ALL* questions   Marks   [CO#]   [PO#]

3. a.	Describe flow control. Detail the Go-Back-N ARQ operation.	2+3	CO1	PO1
b.	What are the three criteria necessary for an effective and efficient network? Explain.	5	CO2	PO1

<center>(OR)</center>

c.	Define unicast, multicast and broadcast with examples.	3+2	CO1	PO2
d.	Explain CSMA and protocols with Collision detection (CD) and Collision Avoidance (CA) with a suitable diagram.	5	CO1	PO2
4. a.	Explain the various media used for data transmission in computer networks.	5	CO1	PO1
b.	Explain the bus type topology and ring type topology networks. Compare their performances.	3+2	CO2	PO2

<center>(OR)</center>

c.	Explain TDM, FDM and WDM with proper architecture.	5	CO2	PO1
d.	Explain IEEE 802.11 wireless LANs with its architectures.	2+3	CO1	PO2
5. a.	Explain Bluetooth with its types of networks.	5	CO2	PO2
b.	Write the difference between Pure Aloha and Slotted Aloha.	5	CO2	PO1

<center>(OR)</center>

c.	List the layers of OSI reference model and explain the functions of each layer?	5	CO1	PO1
d.	Explain the categories of standard ethernet for physical layer implementations.	5	CO2	PO2
6. a.	Define FHSS and explain how it achieves bandwidth spreading.	2+3	CO1	PO1
b.	A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1. What is the actual bit string transmitted?	5	CO2	PO2

<center>(OR)</center>

c.	Suppose that the sender wants to send 4 frames each of 8 bits, where the frames are 11001100, 10101010, 11110000 and 11000011. How the receiver assumes that no error has occurred after the implementation using checksum method?	5	CO1	PO2
d.	Explain simplex mode, half duplex mode and full duplex mode with proper understanding.	5	CO2	PO2

<center>--- End of Paper ---</center>