Total No. of Questions: 6

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Enrollment No. EN21CS304039

Faculty of Engineering / Science

End Sem (Odd) Examination Dec-2022

CS3CO28 / BC3CO39 Data Communication

Programme: B.Tech. / B. Sc. Branch/Specialisation: CSE / Computer Science

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Which are guided media? **1**

(a) Radio broadcasting (b) Cellular telephone system

(c) Satellite communications (d) Local telephone system

ii. Bandwidth of the signal that ranges from 40Hz to 4KHz- **1**

(a) 3.96KHz (b) 396KHz (c) 39.6KHz (d) 3.96Hz

iii. Carrier signal in modulation technique is _____ signal. **1**

(a) High frequency (b) Low frequency

(c) High amplitude (d) Low amplitude

iv. Which of the following is not a digital-to-analog conversion? **1**

(a) ASK (b) PSK (c) FSK (d) AM

v. A local telephone network is an example of a _____ network. **1**

(a) Packet switched (b) Circuit switched

(c) Bit switched (d) Line switched

vi. Which network topology requires a central controller or hub? **1**

(a) Star (b) Mesh (c) Ring (d) Bus

vii. The network layer is concerned with _____ of data. **1**

(a) Bits (b) Frames (c) Packets (d) Bytes

viii. A 4 byte IP address consists of _____. **1**

(a) Only network address

(b) Only host address

(c) Network address & host address

(d) None of these

ix. In cyclic redundancy checking, what is CRC? **1**

(a) Quotient (b) Divisor (c) Dividend (d) Remainder

P.T.O.

	x.	Calculate VRC for data 11010101 (consider odd parity generator). (a) 0 (b) 1 (c) 2 (d) None of these	1
Q.2	i.	Write the Shannon's channel capacity and Nyquist's channel capacity formula.	2
	ii.	Write the definition of bandwidth, propagation time, and throughput.	3
	iii.	Discuss different transmission impairment in data communication.	5
OR	iv.	Explain different guided transmission media in detail.	5
Q.3	i.	Discuss the concept of time division multiplexing with neat diagram.	4
	ii.	Discuss LZ compression technique in detail with example.	6
OR	iii.	Encode the bit pattern 111100011001 using Manchester, Differential Manchester, NRZ-L and NRZ-I.	6
Q.4	i.	What do you understand by connection oriented and connection less services?	4
	ii.	Discuss various topologies with their advantages and disadvantages.	6
OR	iii.	Distinguish between virtual circuit packet switching and datagram packet switching technique.	6
Q.5	i.	Explain the working of network layer in OSI model.	4
	ii.	Explain physical addressing, logical addressing and port addressing.	6
OR	iii.	Explain different Internetworking devices- switch, router, gateway, bridge.	6
Q.6		Attempt any two:	
	i.	Explain error correction technique with suitable example.	5
	ii.	Explain parity checking mechanism with suitable example.	5
	iii.	Generate redundant bit using cyclic redundancy check algorithm when data word is 1001 and divisor is 1011.	5

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viii. (a) Tr