Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination - Synoptic

Sept 2018

Max. Marks: 20 Duration: 60 Min

Class: T.E. Semester: V

Course Code: CE51 Branch: Computers

Name of the Course: Data Communication and Computer Networks

Instruction:

(1) All questions are compulsory

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q No.	Question	Max. Mark	CO
Q.1 (a)	Differentiate between OSI and TCP/IP reference Model.(Any 6 points) **Answer:** (0.5 mark for each correct difference) * 6 - 3 marks	03	CO2
Q.1(b)	Consider a CSMA/CD network that transmits data at a rate of 100 bps. The propagation time over the network for all stations is 4.64 sec. What is the minimum frame size if jamming signal is 48 bits? Justify. **Answer:** Correct Answer - 1 marks Justification - 1 mark	02	CO3
Q.2	Draw Frame format of S-frame in HDLC and explain each field in detail. **Answer:** Frame format of HDLC - 1 marks Control field- (0.5 marks for each type of S-frame)*4 - 2 marks (0.5 marks for each field)*4 - 2 marks	05	CO4
Q.3 (a)	Calculate number of parity bits needed to correct a single bit error in dataword "1011" using Hamming Code and calculate codeword using even parity for given dataword. (Please mention formula) **Answer:** Calculation for number of parity bit - 0.5 marks (0.5 mark for each parity bit value) * 3 - 1.5 marks Correct codeword - 1 marks **OR** Deduct the number of redundant bits to be added and calculate the codeword using Cyclic Redundancy Check with generator function G(x)=x^3+1 for the message represented as M(x)= x^3+x^2+x. (Please mention formula) **Answer:** Calculation for the number of redundant bits - 0.5 marks (0.5 marks for each step)*4 - 2 marks Correct codeword - 0.5 mark	03 03	CO3 CO3

Q.3 (b)	GB4 protocol is used for flow control over a link with packet drop probability of 20%. The sender wants to send 10 Packet over the same link. How many packets need to be transmitted over the link in order to complete the transmission while accounting for the packet drop probability? Justify your answer. **Answer:** Correct Answer - 0.5 marks Justification - 1.5 mark	02	CO3
	OR		
	Sender wants to send 3 frame to receiver. Each frame consist of 5000 bits. Bandwidth of the channel is 1000 bps. The distance between sender and receiver is 200 m and speed of the signal in medium is 100 m/s. Stop and Wait protocol is implemented over the channel. Considering channel to be noiseless what will be the total amount of time needed to complete the entire communication? **Answer:** Calculate Transmission time - 0.5 marks Calculate Propagation time - 0.5 marks Calculate time for entire communication - 1 mark	02	CO3
Q.4	The given Data Stream is "00110011". Draw the graph for following Coding Schemes assuming that last signal level has been positive. (i) NRZ-L (ii) NRZ-I (iii)RZ (iv) Manchester (v) Differential Manchester **Answer:** (1 mark for each correct graph) * 5 - 5 marks	05	CO1
	OR		
	We have a baseband channel. Calculate the data rate provided by the following line coding schemes for corresponding bandwidth of the channel.(Please mention formula) (i) NRZ-L at Bandwidth=1 MHz (ii) MLT-3 at Bandwidth= 2 MHz (iii) 8B6T at Bandwidth=3 MHz (iv) Manchester at Bandwidth= 4 MHz (v) 2B1Q at Bandwidth=5 MHz **Answer:** (0.5 mark for each correct formula) * 5 - 2.5 marks (0.5 mark for each correct values with unit) * 5 - 2.5 marks	05	CO1