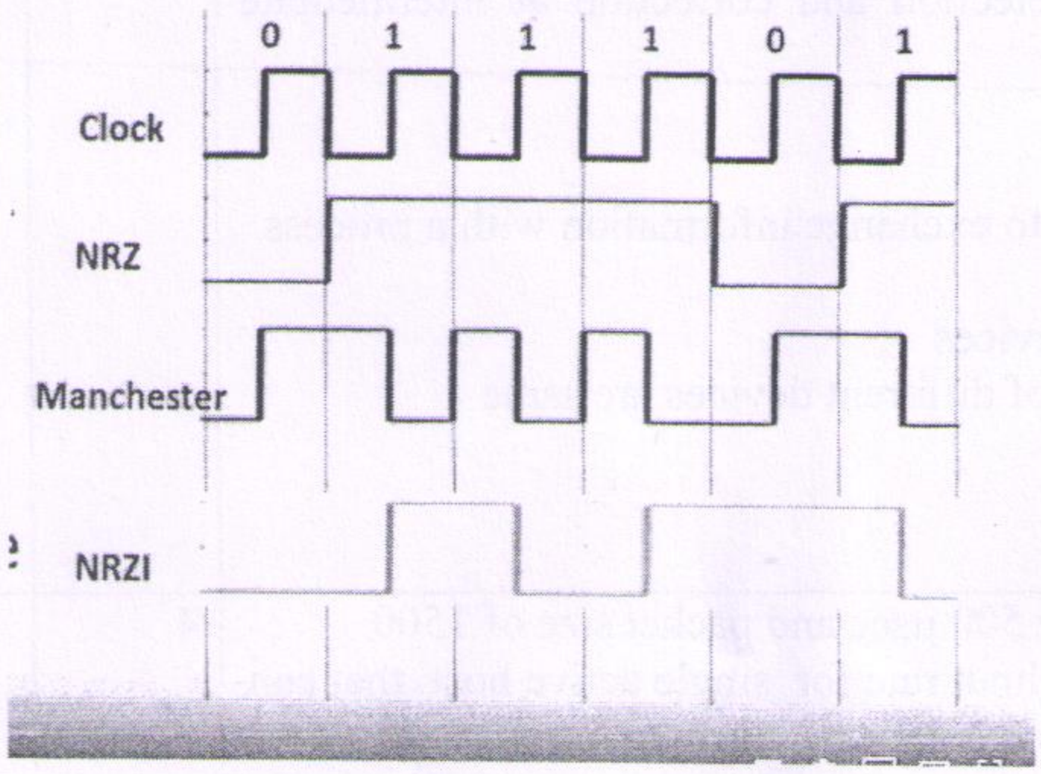
Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination Synoptic
September 2019

Max. Marks: 20 | **Duration: 60 Minutes**
Class: TE | **Semester: V**
Course Code: IT52 | **Branch: IT**
Name of the Course: Computer Networks

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Max. Marks	CO	BL
Q.1 . (a)	State true or false and justify your answer bridge isolate the two broadcast domain. Ans-true, due to port-on each port separate LAN segment is attached. Ans-1/2 mark, Justification ½ mark	1	1	2
Q.1 . (c)	State and explain in short the function of any 2 layer in OSI model? Each function 1 mark	2	1	2
Q.1 . (d)	What is satellite's footprint? Ans –The area which receives a signal of useful strength from the satellite is known as the satellite's footprint.	1	1	2
Q.1 . (e)	Neatly draw the waveforms resulting from NRZ,NRZI, Manchester signaling for transmitting the bit stream 011101.  Each waveform 1 mark	3	1	2
Q.2. (a)	Transmit the message 1011001001001011 and Consider the Cyclic Redundancy Check (CRC) generator polynomial $x^8 + x^2 + x^1 + 1$ Determine the message that should be transmitted .	3	2	3

	Generated codeword, Generator polynomial, CRC –each ½ marks, division 1.5 marks			
	OR A seven bit Hamming code received 1110101. What will be the correct codeword. Error in bit p4,p2 and p1 –each ½ marks-110 Finding bit position of error ½ mark-6th bit Correct the bit and final codeword-1mark-1010101			
Q.2. (b)	Two neighboring nodes A and B uses sliding window protocol with 3 bit sequence number . As the ARQ mechanism Go-back-N is used with window size of 4. Assume A is transmitting and B is receiving show window position for the following events: 1.Before A send any frame. 2.After A send frame 0,1,2 and receive ACK from B for 0 and 1. Each ans 1 mark	2	2	3
Q.2. (c)	1. 1. State the function of data link layer. 2.State true or false consider M1 is the source MAC address and M2 is the destination MAC address in a data packet (MAC frame) which is flowing in a Ethernet LAN. Then M1 and M2 should have direct physical connection between them via a ethernet cable.(ie- there would not be any intermediate network device between M1 and M2). Ans-true **OR** 1. What is the need of error detection and correction at intermediate devices? 2. Two devices are in network if a) a process in one device is able to exchange information with a process in another device b) a process is running on both devices c) PIDs of the processes running of different devices are same d) none of the mentioned Answer:a	1 1	2	3
Q.3. (a)	Consider a token ring with latency 500 μsec and packet size of 1500 bytes. What is the effective throughput rate for single active host that can be achieved if the ring has 4 Mbps bandwidth? Assume the strategy used is delayed token reinsertion. Efficiency 1 mark-0.75 Tt-1 mark- 0.166 a 1 mark- 0.1666 Throughput 1 mark - 3Mbps	4	2	3

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Q.3. (b)	Differentiate between pure Aloha and slotted aloha for 2 different points.	3	2	3

Pure Aloha	Slotted Aloha
Any station can transmit the data at any time.	Any station can transmit the data the beginning of any time slot.
Vulnerable time in which collision may occur $= 2 \times T_t$	Vulnerable time in which collisi may occur $= T_t$
Probability of successful transmission of data packet $= G \times e^{-2G}$	Probability of successful transmission of data packet $= G \times e^{-G}$
Maximum efficiency = 18.4% (Occurs at G = 1/2)	Maximum efficiency = 36.8% (Occurs at G = 1)
The main advantage of pure aloha is its simplicity in implementation.	The main advantage of slotted alo is that it reduces the number of collisions to half and doubles th efficiency of pure aloha.