Sardar Patel Institute of Technology

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

(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Makeup 2019-20

Max. Marks: 60 Duration: 180 Min

Class: T.E. Semester: V

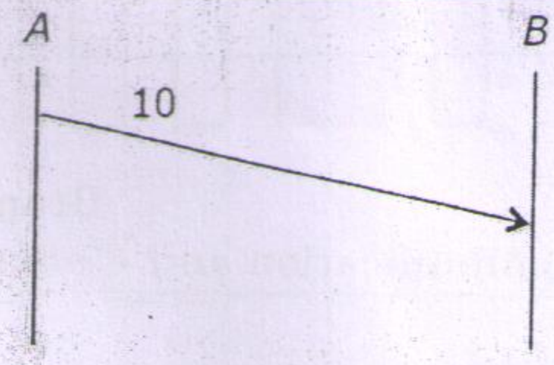
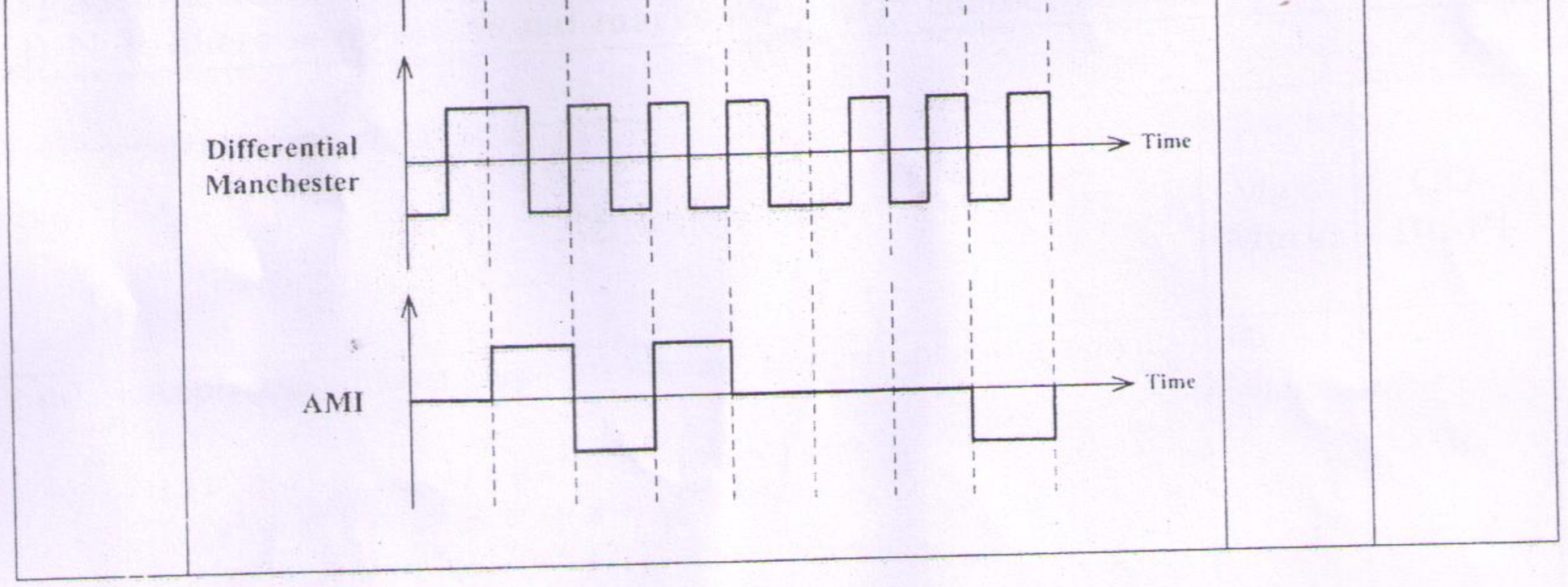
Course Code: CE51 Branch: Computer Engineering

Name of the Course: Data Communication and Computer Networks

Instruction:

(1) All questions are compulsory.
(2) Draw neat diagrams and keep your answers clear and concise.
(3) Assume suitable data if necessary.
(4) Note there is no fractional marks for partly correct answer.

Q No.	Question	Max. Marks	CO-BL-PI
Q.1 (a)	Apply the following operations on the corresponding polynomials: (i) $(x^3+x^2+x+1)-(x^4+x^2+x+1)$ (ii) $(x^3+x^2)\times(x^4+x^2+x+1)$ (iii) $(x^3+x^2+x+1)/(x^2+1)$ **OR** Prove the five properties of orthogonal sequences using W2 walsh table.	06 06	1-3-2.4.1
Q.1 (b)	Compare and contrast flow control and error control	06	3-4-2.2.4
Q.2 (a)	Consider the following two IP addresses from two different IP blocks of addresses (i) 25.34.12.56/16 (ii) 182.44.82.16/26 Find the first addresses (network address) and the last addresses (limited broadcast address) of both blocks?	06	2-3-2.4.1
Q.2 (b)	A sender sends a series of packets to the same destination using 5-bit sequence numbers. If the sequence number starts with 0, what is the sequence number after sending 100, 200 and 301 packets?	06	3-3-2.4.1
Q.3 (a)	Consider Following figure 1 where a TCP sender that sends 10 bytes per packet. Suppose that the sender transmits six packets one right after another (including the one shown at right). (i) Show the packets and the corresponding acks that TCP would return in a typical situation. Label the data packets with the sequence number and the ack packets with the ack number.If the second of the acks is lost, will the sender retransmit any packets? Why or why not?	06	4-3-2.2.3

	(ii) Continuing the example, suppose that the next two packets sent arrive out of order and that the sender transmits four more packets after these and that the second packet in this group of four is lost. Extend the diagram to show these packets and the resulting acknowledgments. You need not show the retransmission of the lost packet. 		
Q.3 (b)	A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled with a rate 1 Mbps. The bucket is initially filled to capacity with 1 Mb. How long can the computer transmit at the full 6 Mbps?	06	4-3-2.2.3
Q.4 (a)	A user in Mumbai, connected to the internet via a 5 Mb/s connection retrieves a 50KB (B=bytes) web page from a web server in Delhi, where the page references 4 images of 300 KB each. Assume that the one way propagation delay is 20ms. (i) Approximately how long does it take for the page (including images) to appear on the user's screen, assuming persistent HTTP? (ii) How long would it take using non-persistent HTTP(assume a single connection)?	06	4-3-2.2.2
Q.4 (b)	Show the steps of transferring a Web page from SPIT server to client for the case of non-persistent connections. Let's suppose the page consists of a base HTML file and 10 JPEG images, and that all 11 of these objects reside on the same server. Further suppose the URL for the base HTML file is http://www.spit.ac.in/compenigneering/home.index	06	4-2-2.2.2
	OR		
Q.4 (a)	What is the main striking difference between FTP and HTTP? Explain thoroughly.	06	4-3-2.2.3
Q.4 (b)	Suppose that we want to change the IP address of comps.spit.ac.in from 128.119.40.186 to 128.119.40.187 and change this mapping in the DNS authoritative name server for comps.spit.ac.in. Once this mapping is changed in the authoritative name server, will all future references (generated anywhere in the Internet) to comps.spit.ac.in then be sent to 128.119.40.187? Explain andWhat resource records (RRs) will you be providing to the .in authoritative registrar if you have dns server: dns1.spit.ac.in with IP addr 128.118.13.50?	06	4-2-2.2.2

Q.5 (a)	**Answer ANY TWO** (i) Suppose that a receiver in its effort to control the bursts from the transmitter it delays sending ACKs until it has enough empty buffers. What is a possible problem with such a strategy? How can these problems be resolved? (ii) Name reservation styles used by RSVP and indicate their type of reservation options they use. (iii) In a DNS server, what fields are represented by four-tuple of resource record?	06	3-2-2.2.2
Q.5 (b)	Find the 8-bit data stream for each case depicted in Figure.	06	1-3-2.4.1