

Time:		Max.Marks: 100					
S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	COI BTL
1.	TCP/IP reference model is protocol specific and OSI model is not protocol specific. Justify and explain the above statement in detail with a neat sketch?	choice Q-2		10Marks	CO1	2	2
2.	Let us assume that a data packet is to be transmitted from Source A to Destination B via nodes X and Y. Say all the above nodes mentioned are following OSI layered architecture for networking. Explain in detail with a neat diagram the movement of data in different layers each node.			10Marks	CO1	2	2
3.	a) CRC generator (divisor) is most often represented not as a string of 1s and 0s, but as an algebraic polynomial. Explain the process of converting the polynomial to binary for the following— $x^{16} + x^{15} + x^{10} + x^5 + x^2 + x + 1$. b) Apply CRC on the given data 110101 using the generator polynomial as 1100. Verify errors at the receiver's side assuming case-1 as no transmission errors, case-2 assuming that there exists transmission errors	choice Q-4		15Marks	CO1	2	2
4.	a) Explain the general algorithm of hamming code step by step in detail. b) Perform Hamming Code assuming data as "1011". Find Senders final data after computing hamming code and find for errors at the receiver side.			15Marks	CO1	2	2
5.	Explain with a flowchart Aloha, CSMA, CSMA/CD and CSMA/CA	choice Q-6		10Marks	CO2	2	2
6.	List and explain the features of Link state routing protocol. Compare and contrast Link state routing algorithm with Distance vector routing algorithm.			10Marks	CO2	2	2
7.	Station A needs to send a message consisting of 11 packets to Station B using a sliding window (window size 4) and go-back-n strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B?	choice Q-8		15Marks	CO2	2	2
8.	Compute 3 routing tables near nodes A, B and C, which helps to find best path to all nodes in the network using Dijkstra's routing algorithm.			15Marks	CO2	2	2
9.	Discuss in detail different congestion control algorithms	choice Q-10		10Marks	CO3	3	2
10.	Illustrate with a neat sketch the series of states visited by the server and also Client, assuming the client begins for connection establishment and connection release.			10Marks	CO3	3	2
11.	a) An organization has a class B network and wishes to form subnets for 64 departments. What would be subnet mask? b) Compute Network address and Broadcast address if destination address known is 198.66.52.89. c) Find the number of addresses in a range if the first address is 146.102.29.0 and the last address is 146.102.35.250.	choice Q-12		15Marks	CO3	3	3
12.	Justify the below statements with appropriate explanation in detail. a) The maximum payload of a TCP segment is 65,495 b) FIN control field in TCP header is used to specify whether the sender has no more data to transmit? c) The SYN flag synchronizes sequence numbers to initiate a TCP connection.			15Marks	CO3	3	2
13.	With a neat Sketch explain the steps involved in transmitting an Email using SMTP and POPv3 protocols.	choice Q-14		10Marks	CO4	3	2
14.	Name the transport protocol used for the following and explain each in detail. a. Real time Multimedia b. File Transfer c. Domain name System d. Email			10Marks	CO4	3	2
15.	a) The cipher text using playfair cipher is given below. The key used was "royal new zealand navy". Decrypt the given cipher text. b) Explain the use of S-boxes in Data Encryption Standard (DES). KXJEY UREBE ZWEHE WRYTU HEYFS KREHE GOYFI WTTTU OLKSY CAJPO BOTEI ZONTX BYBNT GONEY CUZWR GDSON SXBOU YWRHE BAAHY USEDQ	choice Q-16		15Marks	CO4	3	3
16.	Explain encryption and decryption process of RSA algorithm. Apply RSA algorithm to perform encryption and decryption for the following: p = 3; q = 11, e = 7, M = 88			15Marks	CO4	3	3