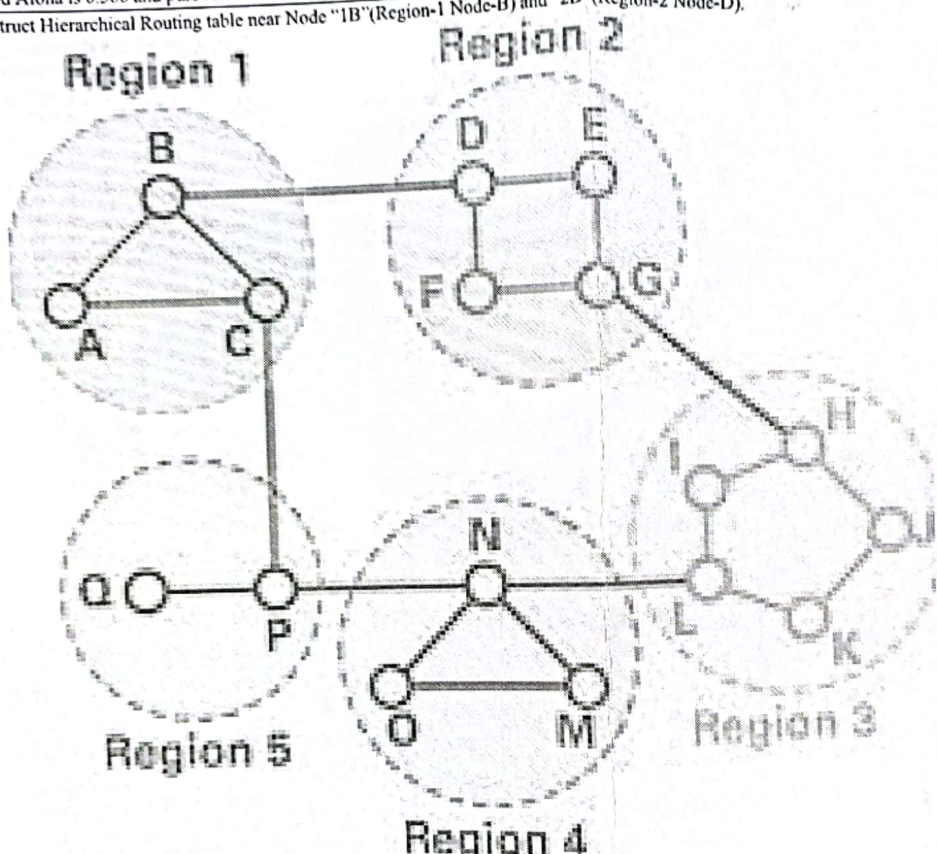




Time:		Max.Marks: 100					
S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	CO1 BTL
1.	List the tasks that a layer can perform in OSI reference model. Is it possible that one (or more) of these tasks could be performed by two (or more) layers?	choice Q-2		10Marks	CO1	2	2
2.	For each of the following four networks, discuss the consequences if a connection fails. a. Five devices arranged in a mesh topology b. Five devices arranged in a star topology (not counting the hub) c. Five devices arranged in a bus topology			10Marks	CO1	2	2
3.	a) Consider the data 10011011 11011101 10100100 10110100 to be transmitted, apply two-dimensional parity on data. Find out the final data that will be transmitted by the sender? Also verify for errors at the receiver. b) Compute Simple parity on data "11011001" and explain its disadvantage.	choice Q-4		15Marks	CO1	2	2
4.	Discuss in detail the process of error detection using CRC with the following example a. Data= 1010111100111011 using generator polynomial x^4+1 b. Data= 110011001111 Using generator Polynomial x^4+1			15Marks	CO1	2	2
5.	Explain with a flow diagram the working principle of Pure Aloha and Slotted Aloha. It is stated that the maximum throughput in slotted Aloha is 0.368 and pure Aloha is 0.184. Justify	choice Q-6		10Marks	CO2	2	2
6.	Construct Hierarchical Routing table near Node "1B"(Region-1 Node-B) and "2D"(Region-2 Node-D). 			10Marks	CO2	2	2
7.	a) Assume there are 5 stations that share the common communication channel. Following are their addresses that are broadcasted by each node NodeA: 01110 NodeB: 10011 Node-C: 11111 Explain the process of implementing binary countdown algorithm in-order to give any one station access of channel without any collisions. b) Explain the disadvantage of Bit map over binary count down with an example.	choice Q-8		15Marks	CO2	2	2
8.	Station A needs to send a message consisting of 9 packets to Station B using a sliding window (window size 3) 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?			15Marks	CO2	2	2
9.	Justify the below statements with appropriate explanation in detail. a) Leaky Bucket algorithm is used to shape the bursty traffic into fixed rate traffic by averaging the data rate. b) Silly window syndrome is a problem in computer networking caused by poorly implemented TCP flow control.	choice Q-10		10Marks	CO3	3	2
10.	Explain the problem of N-Way handshake using 2 Army problem and why is it so crucial to be addressed while connection release.			10Marks	CO3	3	2
11.	Identify the Class, Network IP Address and Broadcast address of each IP Address given below A. 222.15.1.10 B. 252.0.1.2 C. 302.1.2.3 D. 10.21.12.1	choice Q-12		15Marks	CO3	3	3
12.	a) In Subnetting, bits are borrowed from network ID portion. Justify the given statement is true or false by assuming a class A network with 4 subnets. b) For enabling ease in maintaining the routing information, Open Shortest Path routing algorithm divided an Autonomous system into Areas. Sketch out the architecture assuming 4 areas in an Autonomous system and explain the complete architecture and OSPF working principle in detail.			15Marks	CO3	3	2
13.	Tabulate the relationship between Security goals, services and Mechanisms. Explain each of them in detail.	choice Q-14		10Marks	CO4	3	2
14.	Apply Columnar technique as round-1 and Rail fence technique as round-2 assuming the following. Plain text: "computer networks and security course" Rail fence technique key: 3 Columnar technique key: 2134			10Marks	CO4	3	3
15.	Explain encryption and decryption process of RSA algorithm. Apply RSA algorithm to perform encryption and decryption for the following: p = 11; q = 17, e = 7; M = 5.	choice Q-16		15Marks	CO4	3	3
16.	a) Explain key generation algorithm in DES. b) Calculate two rounds of keys using the following: Permuted Choice P10 = '3 5 4 6 8 7 2 10 9 1', Permuted Choice P8 = '6 8 4 2 1 3 5 7' and left shift by 1 & 2 positions respectively for round 1 and 2 respectively using DES algorithm. Consider the Key "0 1 0 1 0 1 0 1". (Note: For computational convenience the size of Key is reduced).			15Marks	CO4	3	3