Type: DES

Q1. Draw the ISO:OSI reference model and explain the functions of each layer. (4)

Q2. What is the minimum SNR required to transmit a signal if CAT 4 cable is used in Standard ethernet? (3)

Q3. Four sources are multiplexed using statistical TDM. If each source delivers 100 bps, what is the (i) frame size, (ii) frame duration and (iii) frame rate. Assume 1 bit as unit of data. (3)

Q4. Explain any four framing techniques at DLL with relevant examples. Mention the advantages and disadvantages of each technique. (4)

Q5. Calculate the checksum of the given IPv4 header. (3)

4	5	0	28
1		0	0
4	17		0
10.12.14.5			
12.6.7.9			

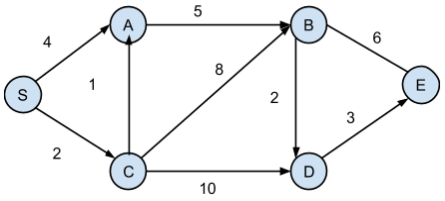
Q6. A channel has a capacity of 256Mbps, maximum frame size is 1024 bytes and the round-trip time is 200microseconds. What is the efficiency of the sender assuming stop-and-wait protocol? (3)

Q7. With the help of a neat diagram, explain the flow chart of CSMA/CD protocol. (4)

Q8. In a system employing CSMA/CD, after the 5^{th} collision, what is the probability that a node chooses K=4? The result K=4 corresponds to how many seconds delay on a standard Ethernet? (3)

Q9. Draw and explain the FDDI frame structure. (3)

Q10. Using Dijkstra's algorithm, find the least cost from node 'S' to all other nodes in the network given below. Show the routing updates in the form of a table.



(4)

Q11. Draw IPv6 header format and explain each field. (3)

Q12. What is silly window syndrome? Explain the solutions to resolve it. (3)

Q13. A university is granted a block of addresses with the beginning address 14.24.74.0/24. The university needs to have 3 sub-blocks of addresses to use in its three subnets: 1st sub-block of 120 addresses, 2nd sub-block of 60 addresses, and 3rd sub-block of 10 addresses. Design the sub-blocks. Also mention the range of addresses left after these allocations. (4)

Q14. Draw the TCP header format and explain each field. (3)

Q15. Why FTP is needed? Explain its features with relevant diagrams. (3)