PART-I

Marks

1 a. RIP runs over UDP, OSPF runs over IP, and BGP runs over TCP. Compare the merits of operating a routing protocol over TCP, UDP, and IP. (6 Marks)

b. Explain ICMP as Error reporting and Query message with an example. (6 Marks)

c. Write a link-state routing algorithm to calculate shortest path. Construct the network topology from matrix given in Table 1. Determine the least cost path from node u to all other nodes and write the forwarding table for node u. (8 Marks)

Table 1: Routing Matrix

	u	v	w	x	y	z
u	-	2	5	1	-	-
v	2	-	3	2	-	-
w	5	3	-	3	1	5
x	1	2	3	-	1	-
y	-	-	1	1	-	2
z	-	-	5	-	2	-

2 a. What is the difference between a group-shared tree and a source-based tree in the context of multicast routing? (6 Marks)

b. Consider the OSPF protocol. (6 Marks)

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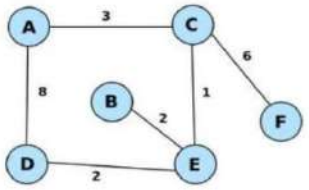
i. Explain how OSPF operates in an autonomous system that has not defined areas.

ii. Explain how the notion of area reduces the amount of routing traffic exchanged.

iii. Is the notion of area related to subnetting? Justify.

c. With the indicated link costs in the following figure, find the shortest path from node A to all network nodes using Bellman-Ford algorithm. (8 Marks)



3 a. Host A sends a datagram to host B. Host B never receives the datagram and host A never receives notification of failure. Justify the above case. (6 Marks)

b. When a host joins a multicast group, it must change its IP address to that of the (6 Marks)

128.96.39.0	255.255.255.128	Interface 0
128.96.39.128	255.255.255.128	Interface 1
128.96.40.0	255.255.255.128	R2
192.4.153.0	255.255.255.192	R3
Default		R4

4 a. As a mobile node gets farther and farther away from a base station, what are two actions that a base station could take to ensure that the loss probability of a transmitted frame does not increase? (5 Marks)

b. Explain 3G system architecture with a neat diagram. Differentiate between 3G and 4G. (5 Marks)

5 a. Describe the transmission rate of the stream by adding overhead. Does interleaving also increase the transmission rate? Justify. (5 Marks)

b. What is the function of meta file in streaming stored video? (5 Marks)

Computer Network-2 (20ECSC303)

Duration: 1hr 30 min **Max. Marks: 50**

Note: ***i) Answer any TWO full questions from Q.No. 6,7&8and ONE full question from Q. No.9&10***

PART_II

Marks

6 a. Perform 2-D even parity check for the following data and write codeword to be sent. Identify the limitations of this method with appropriate case example.

I. 10110101 II. 01110111 III. 10100001 (6 Marks)

b. Describe the characteristic of multiple access protocol for a broadcast channel of rate R bps. (6 Marks)

c. Propose solution to connect N switches supporting K VLAN groups, so that minimum switching, maximum connectivity could be achieved. Justify your solution. (8 Marks)

7 a. Consider an example of switched network consisting of 4 switches in which host A is connected to switch 1 through port 2 and host B is connected to switch 3 through port 3, explain how a packet is traversed from host A to B using source routing approach. (6 Marks)

b. What is MPLS? Discuss with an example how the packet transmission rate (6 Marks)

7 a. Consider an example of switched network consisting of 4 switches in which host A is connected to switch 1 through port 2 and host B is connected to switch 3 through port 3, explain how a packet is traversed from host A to B using source routing approach. (6 Marks)

b. What is MPLS? Discuss with an example how the packet transmission rate will be faster with an MPLS mechanism. (6 Marks)

c. Plot the efficiency of slotted ALOHA, pure ALOHA and CSMA/CD. Assuming p, draw the graph for the following values of N for slotted and pure ALOHA. (8 Marks)
a. N=15. b. N=25. c.N=35.

8 a. Propose a mechanism that virtual circuit switches might use so that if one switch looses all its state regarding connection then a sender of packets along a path through that switch is informed of the failure. Justify. (6 Marks)

b. How ARP works with nodes that are beyond subnet? Draw ARP header structure and explain its functioning. (6 Marks)

c. Computer A wants to send data to computer B. Assume data sent is your roll number [X] in binary, divisor is 1011, solve following using polynomial CRC (8 Marks)

I. Represent the data in polynomial notation.

II. Show how source encrypts data

9 a. What are the differences between a master device in a Bluetooth network and a base station in an 802.11 network? (5 Marks)

b. Which cellular network components provide the functions of the home and foreign agent? (5 Marks)

10 a. Discuss how SIP is used in the transmission of multimedia. (5 Marks)

b. How does streaming live video differ from streaming stored video? (5 Marks)