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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Electronics and Communication Engineering **Duration: 3 hrs.**
Course Code: 16EC7DCDCN **Max Marks: 100**
Course: Data Communication Networks **Date: 05.03.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1 a) What is NAT? With Illustrations, show how NAT can help in address depletion? **08**

b) List three transition strategies to move from IPv4 to IPv6. With neat diagrams, discuss the transition strategies. **08**

c) Why is there no need for the ICMPv4 message to travel outside its own network? **04**

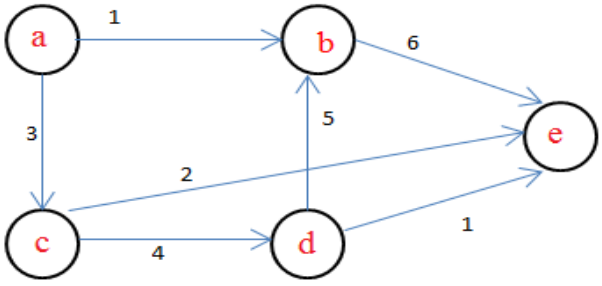
UNIT - II

2 a) Find the topology of the network if the Table (a) is the routing table for router R1. **06**

Table 2(a)

Mask	*Network Address*	*Next-Hop Address*	*Interface*
/27	202.14.17.224	-	m1
/18	145.23.192.0	-	mO
Default	Default	130.56.12.4	m2

b) Describe Dijkstra's algorithm using a flowchart and determine the shortest path in the given graph (b), identify the shortest path having minimum cost to reach vertex E if A is the source vertex using Dijkstra's algorithm. **10**



Graph (b)

	c)	Why do OSPF messages propagate faster than RIP messages?	**04**

OR

3	a)	Discuss the three forwarding techniques and give a brief description of each.	**08**
	b)	With illustration, differentiate between Multicasting and Multiple unicasting.	**08**
	c)	What is the basis of classification for the four types of links defined by OSPF?	**04**

UNIT - III

4	a)	With a neat diagram, explain all the fields of the UDP datagram format.	**08**
	b)	With neat diagram, discuss the three-way handshaking process in TCP.	**08**
	c)	Imagine a TCP connection is transferring a file of 6000 bytes. The first byte is numbered 10,010. What are the sequence numbers for each segment if data are sent in five segments with the first four segments carrying 1000 bytes and the last segment carrying 2000 bytes?	**04**

OR

5	a)	Discuss the Token bucket for traffic shaping and explain its effect.	**08**
	b)	In a leaky bucket used to control liquid flow, how many gallons of liquid are left in the bucket if the output rate is 5 gal/min, there is an input burst of 100 gal/min for 12 s, and there is no input for 48 s?	**04**
	c)	Briefly discuss the various congestion control mechanisms.	**08**

UNIT - IV

6	a)	Discuss any two approaches of streaming stored audio/video with neat diagrams.	**10**
	b)	Discuss how message confidentiality is achieved with Symmetric-key cryptography.	**10**

UNIT - V

7	a)	What are the various traditional network applications. Discuss the two popular application that use the request/reply paradigm.	**10**
	b)	What is Overlay Network? With an example, show how the concept of tunneling is used in an Overlay Network.	**10**

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