

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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Sixth Semester B.E. Degree Examinations, September/October 2024

COMPUTER NETWORKS**(Computer Science & Engineering)**

Duration: 3 hrs

Max. Marks: 100

*Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module.**2. Missing data, if any, may be suitably assumed*

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>Module-1</u>			
1.	a. Recognize the different components of data communication system. Explain them with a neat diagram.	07	(3 :1: 1.6.1)
	b. Compare OSI and TCP/IP models by giving the main functionalities of each layer.	07	(3 :1: 1.6.1)
	c. Write a Short notes on : (i) Dataflow (ii) Network criteria (iii) Types of Connections	06	(2 :1: 1.6.1)
(OR)			
2.	a. Discuss in detail transmission impairments problems.	07	(3 :1: 1.6.1)
	b. Represent the following sequences using different line coding schemes. (Polar and Bipolar) (i) 101011100 (ii) 10110011.	07	(3 :1: 1.6.1)
	c. What is the necessity of encoding? Demonstrate with the help of PCM.	06	(2 :1: 1.6.1)
<u>Module-2</u>			
3.	a. Compare stop and wait protocols with pipelined protocols. Which protocol is better? Justify your answer.	07	(3 :2: 1.6.1)
	b. Explain in detail HDLC frame format, and three types of frames used in HDLC.	07	(3 :2: 1.6.1)
	c. Construct block diagram of encoder and decoder for simple parity check code	06	(2 :2: 1.6.1)
(OR)			
4.	a. Demonstrate the working of CRC with a block diagram and an example.	07	(3 :2: 1.6.1)
	b. List and explain channelization protocols.	07	(3 :2: 1.6.1)
	c. Write a short note on the concept of checksum and its algorithm.	06	(2 :2: 1.6.1)
<u>Module-3</u>			
5.	a. Draw the datagram formats for IPv4 and IPv6, compare both the formats.	07	(3 :3: 1.6.1)
	b. Explain DV (Bellman-Ford) algorithm in detail with all the steps and a relevant network example.	07	(3 :3: 1.6.1)
	c. Identify various ICMP message types.	06	(2 :3: 1.6.1)
(OR)			

6. a. Differentiate between Intra AS and Inter AS routing. In brief explain one protocol for each. 07 (3 :3: 1.6.1)
- b. Implement the Dijkstra's algorithm for the network shown in Fig. Q6 (b). Take the node 'u' as source to compute the minimum-costs to all others nodes, and draw spanning tree. 07 (3 :3: 1.6.1)

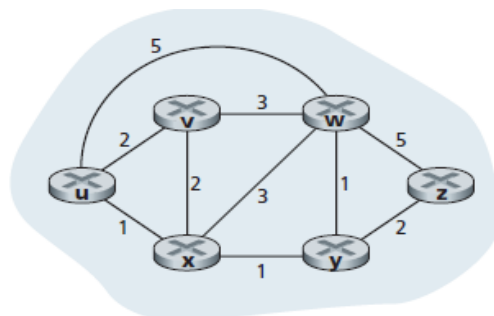


Fig. Q 6(b)

- c. With the help of an example network discuss in detail how unicast, multicast, and broadcast routing are different from each other. Give one example routing protocols for each. 06 (2 :3: 1.6.1)

Module-4

7. a. Compare selective repeat protocol and Go Back N (GBN) protocol. Which is better? Justify your answer with the help of their working figures. 07 (3 :4: 1.6.1)
- b. Analyze the process of multiplexing and de-multiplexing in transport layer with a neat figure. 07 (3 :4: 1.6.1)
- c. Draw the UDP segment structure and explain its various fields and UDP Checksum. 06 (2 :4: 1.6.1)

(OR)

8. a. Compare TCP and UDP. Justify that the UDP protocol is more suitable than TCP in real-time interactive applications. 07 (3:4: 1.6.1)
- b. Demonstrate the working of TCP with the help of its segment structure. 07 (3 :4: 1.6.1)
- c. With a diagram explain the working of ATM ABR congestion control. 06 (2 :4: 1.6.1)

Module-5

9. a. Compare client-server architecture and peer to peer architecture. 07 (3 :5: 1.6.1)
- b. List some of the client-server type of applications. Explain the web application in detail. 07 (3 :5: 1.6.1)
- c. Discuss DNS services and message format with the diagram. 06 (2 :5: 1.6.1)

(OR)

- 10 a. Compare public key and secret key encryption standards. Explain one protocol for each in brief. 07 (3 :5: 1.6.1)
- b. Illustrate with example the working of RSA algorithm. 07 (3 :5: 1.6.1)
- c. Write short notes on: (i) Secure Hash Algorithm (ii) Firewalls 06 (2 :5: 1.6.1)

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