

Code No: 155AV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January/February - 2023

DATA COMMUNICATIONS AND NETWORKS

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A**(25 Marks)**

- 1.a) What is the difference between simplex and half duplex dataflow? [2]
- b) Analyze the differences between logical address and physical address. [3]
- c) What is framing? Give an example for bit stuffing. [2]
- d) Compare the difference between Datagram switching and Packet Switching. [3]
- e) What is Subnet masking? Provide subnet mask for Class A and Class C. [2]
- f) Briefly explain about RARP, DHCP protocols. [3]
- g) What is Socket address? Explain how it is related to IP address. [2]
- h) Explain the functionalities of Transport Layer. [3]
- i) What is MIME protocols? [2]
- j) Briefly explain about DNS protocol. [3]

PART – B**(50 Marks)**

- 2.a) Compare the TCP/IP and OSI layer models.
- b) Explain various network topologies with drawbacks. [5+5]

OR

3. With a neat diagram, explain the OSI reference model in detail. Explain the functions performed in each layer. [10]

4. What do you understand by error control? Explain about Hamming code with suitable example. [10]

OR

- 5.a) What is controlled access? Explain Polling and Token passing methods.
- b) Analyze how Slotted ALOHA better than Pure ALOHA. [5+5]

6. Consider a network with nodes A, B, C, D, E, F, G, H where the distance between the nodes is as follows: $A \rightarrow B$ is 6, $A \rightarrow C$ is 5, $A \rightarrow D$ is 3, $B \rightarrow E$ is 2, $B \rightarrow F$ is 8, $C \rightarrow E$ is 4, $D \rightarrow G$ is 5, $E \rightarrow G$ is 3, $E \rightarrow H$ is 7, $E \rightarrow F$ is 2, $F \rightarrow H$ is 5, $G \rightarrow H$ is 6. Apply Shortest path routing protocol to find the shortest path between source A to destination H. [10]

OR

- 7.a) Consider a Network of 400 number of nodes. The network has divided into three subnets. The starting address of the network is 192.172.0.0 then find out the each subnet address range with Mask.

- b) What is purpose of ICMP? Explain its messages in detail. [6+4]

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8.a) Differentiate between UDP and TCP.

b) Describe the working principle of TCP congestion control.

[5+5]

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9. Determine various fields of the TCP header and the working procedure of the TCP protocol. [10]

10. Explain the salient features and functionality of the SMTP protocol.

[10]

OR

11.a) What is FTP? What are the three transmission modes in FTP? Discuss.

b) How HTTP differs from HTTPS? Explain.

[5+5]

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