

**R18**

Code No: 155AV

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year I Semester Examinations, March - 2024**

**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) Write on various modes of transmission. [2]
- b) List the difference between logical, physical and port addresses. [3]
- c) What are the design issues of Data Link layer? [2]
- d) Define bit stuffing and character stuffing. [3]
- e) Why the class C is most commonly used Network class? [2]
- f) Write on how address mapping is performed. [3]
- g) What is the basic concept involved in Elementary Protocol: stop and wait? [2]
- h) Define Congestion. What are the general Principles of Congestion? [3]
- i) What is URL? [2]
- j) What information would you use to examine the view of DNS? [3]

**PART – B**

**(50 Marks)**

- 2.a) What is a Computer Network? Classify Computer Networks. Explain them briefly.
- b) Illustrate the layers of the OSI model through a diagram and use it to demonstrate the specific Function of each layer in data communication. [5+5]

**OR**

- 3.a) Compare and contrast between MAN and WAN with neat diagrams.
- b) Demonstrate the 802.11 Architecture to model and solve challenges in wireless LANs. [4+6]

- 4.a) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial  $x^4+x^3+1$  and data 11100011.
- b) What is the need of Flow control? Explain the common approaches for flow control in data link layer. [5+5]

**OR**

- 5.a) Explain ALOHA and types of ALOHA in detail.
- b) How performance is improved in CSMA/CD protocol compared to CSMA protocol? Explain. [5+5]

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6.a) What is classful addressing? Discuss class A, class B, class C, class D, class E address with its range in decimal dotted notation and example.

b) Discuss the routing control plane, including the protocols and algorithms used for routing decisions in computer networks. [5+5]

**OR**

7.a) Examine and categorize network service models, predicting their applications and demonstrating their impact on communication efficiency.

b) Illustrate the functions of the Internet Protocol (IP) in the network layer. [5+5]

8.a) Distinguish between frequency division multiplexing and time division multiplexing. Draw the neat schematics of these schemes.

b) Compare and contrast Go-Back-N (GBN) and Selective Repeat (SR) protocols for pipelined reliable data transfer, considering their advantages and limitations. [5+5]

**OR**

9. Describe with examples the three mechanisms by which congestion control is formulated in TCP. [10]

10.a) Analyse the message format and the message transfer and the underlying protocol involved in the working of the electronic mail.

b) What is SNMP? Briefly discuss the SNMP model components. [5+5]

**OR**

11.a) Explain the architecture of WWW. Discuss client and server side functionality of this architecture.

b) Discuss the FTP Commands and Replies. [5+5]

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