

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (R, S) / S5 (WP) (R) / S3 (PT) (S,FE) Examination November 2024 (2019 Scheme)

**Course Code: CST 303****Course Name: COMPUTER NETWORKS**

Max. Marks: 100

Duration: 3 Hours

PART A*(Answer all questions; each question carries 3 marks)*

Marks

- | | | |
|----|--|---|
| 1 | Differentiate between the three concepts Layers, Protocols and Interfaces in network architecture. Draw a diagram showing the relationship between the three. | 3 |
| 2 | How many bits can fit on a link with a 4 ms delay, if the bandwidth of the link is
a. 1 Mbps?
h. 10 Mbps?
c. 100 Mbps? | 3 |
| 3 | The following character encoding is used in a data link protocol:
A: 01000111; B: 11100011; FLAG: 01111110; ESC: 11100000
Show the bit sequence transmitted (in binary) for the four-character frame: A B ESC FLAG when Flag bytes with byte stuffing is used. | 3 |
| 4 | Explain the working of Go-back-N protocol. | 3 |
| 5 | Differentiate between Adaptive and Non-Adaptive routing algorithms. Give example for each type. | 3 |
| 6 | How do Leaky bucket algorithm ensure QoS in computer networks? | 3 |
| 7 | Find the class of the following IP addresses:
a. 11110111 11110011 10000111 11011101
b. 10101111 11000000 11110000 00011101
c. 11011111 10110000 00011111 01011101 | 3 |
| 8 | How does BGP solve the Count to Infinity problem? | 3 |
| 9 | Explain TCP connection establishment process. | 3 |
| 10 | What is a URL? Write a URL and explain its constituent parts. | 3 |

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

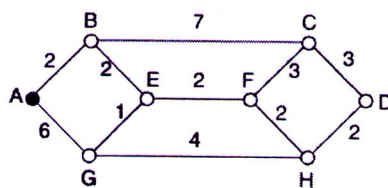
- 11 a) Compare OSI reference model with TCP/IP architecture. 8
 b) Describe the classification of networks based on scale. 6
- 12 a) Draw different possible physical topologies in networks and compare their merits and demerits. 8
 b) Draw the Binary encoding, Manchester encoding, and differential Manchester encoding of the following bit pattern: 0001110101. 6

Module -2

- 13 a) What is the function of MAC sublayer of data link layer? Explain the working principles of different CSMA protocols for wired network. 8
 b) Explain the working of HDLC protocol. Draw HDLC frame format and the different types of HDLC control frames. 6
- 14 a) Describe IEEE 802.3 Ethernet's cabling and frame format. 8
 b) Explain the purpose and working of CSMA/CA in wireless LAN. 6

Module -3

- 15 a) Illustrate the working of Link state routing algorithm. 8
 b) Compare Virtual circuit and Datagram subnets. 6
- 16 a) Compute shortest path from node A to node H, using Shortest Path routing. Illustrate the steps involved. 8



- b) What are the primary QoS parameters required for a flow in a computer network? Explain each of them. Explain any two techniques for providing good QoS. 6

Module -4

- 17 a) What is the function of ICMP protocol? Explain the principal ICMP message types. 8
 b) What is DHCP? Explain its working by detailing the DHCP messages exchanged. 6

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- 18 a) What is an Autonomous System? What is meant by an interior gateway protocol? Explain the working of OSPF protocol. 8
- b) Explain the extension headers in IPv6. 6

Module -5

- 19 a) Draw and explain the fields in TCP segment header. 8
- b) How does FTP work? Explain the FTP commands and replies. 6
- 20 a) Explain the architecture of World Wide Web. 8
- b) What is the purpose of MIME? Explain it's header fields. 6
