Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: CST303

Course Name: COMPUTER NETWORKS

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1		What are the different types of transmission technology widely used in computer networks? Explain.	3
2		What is the transmission time of a packet sent by a station if the length of the packet is 1 million bytes and the bandwidth of the channel is 200 Kbps?	3
3		A bit string, 0111101111101111110, needs to be transmitted at the data link layer. If the flag used is 01111110, what is the string actually transmitted after bit stuffing?	3
4		What is Binary exponential backoff algorithm? Explain its working.	3
5		State Optimality principle. What is a Sink tree?	3
6		Explain the Count-to-Infinity problem in distance vector routing.	3
7		A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?	3
8		What is the function of RARP?	3
9		What is UDP? Draw and explain UDP header format.	3
10		What are the basic functions supported by an e-mail?	3

PART B

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

Module -1

11	a)	Draw ISO OSI reference model and explain the functionalities of each layer in the model.	8
	b)	List and explain the service primitives required to implement a connection-oriented service.	6

12 a) List the different guided media for communication. Explain the cable type, connectors, and applications of each of them. 8

b) Differentiate between simplex, half duplex and full duplex mode of communication with diagrams. Give one example for each. 6

Module -2

13 a) Explain the concept of Sliding window protocols. Differentiate between the working of One-bit sliding window, Selective repeat and Go-back- N bidirectional protocols. 8

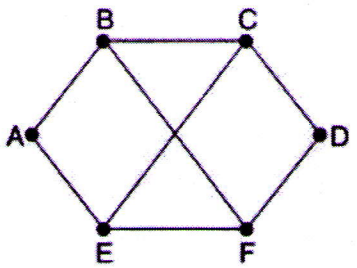
b) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted. 6

14 a) Which are the devices operating in datalink layer and physical layer? Explain the function of each of them. 8

b) Draw and explain IEEE 802.11 Wireless LAN frame structure. 6

Module -3

15 a) Consider the following subnet. 8



Distance vector routing is used, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4).

The measured delays to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the expected delay.

b) Illustrate the packet routing process of mobile hosts. 6

16 a) What is meant by congestion in networks? How does it affect network performance? Describe any five congestion control techniques for datagram networks. 8

b) Explain the steps involved in Multicast routing. 6

Module -4

17	a)	Draw and explain the header format of IPv4 packets.	8
	b)	What is the function of ARP? Explain its working.	6
18	a)	What is meant by exterior gateway routing protocol? Explain the working of BGP?	8
	b)	What is internet multicasting? What is IGMP? Explain any three IGMP messages.	6

Module -5

19	a)	What is TCP? Draw and explain TCP segment header. Explain TCP connection establishment process.	8
	b)	Explain SNMP basic components and their functions. Describe the basic commands used in SNMP.	6
20	a)	What is DNS? Explain resource record and name server. Illustrate DNS working.	8
	b)	What is FTP? Explain it's working in detail with the commands involved.	6

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