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Reg. No. : | | | | | | | | | | |

Question Paper Code: 54806

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Fourth Semester

Information Technology

15UIT406- COMPUTER NETWORK

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are CO1- R

   (a) Added (b) Removed (c) Rearranged (d) Modified

2. The data link layer takes the packets from _____ and encapsulates them into frames for transmission. CO2- R

   (a) physical layer (b) transport layer

   (c) network layer (d) application layer

3. Which one of the following routing algorithm can be used for network layer design? CO3- R

   (a) Shortest path algorithm (b) Distance vector routing

   (c) Link state routing (d) All of the mentioned

4. Connection establishment in TCP is done by which mechanism? CO4- R

   (a) Flow control (b) Three-Way Handshaking

   (c) Forwarding (d) Synchronization

5. The packet of information at the application layer is called _____ CO5- R

   (a) Packet (b) Message (c) Segment (d) Frame

PART – B (5 x 3= 15 Marks)

6. For n devices in a network, what is the number of cable links required for a mesh and ring topology? CO1- R

7. Differentiate Flow control and Error control CO2- R

8. What is BGP protocol and how it works? CO3- R

9. What are the differences between flow control and congestion? CO4- R

10. Why UDP is used in SNMP? CO5- R

PART – C (5 x 16= 80 Marks)

11. (a) Explain with a neat sketch, the functions of the protocols used in each layer of the ISO OSI model and illustrate how communication is taking place between two end systems. CO1- U (16)

Or

(b) Mention the 3 major categories of guided transmission media and explain each in detail. CO1- U (16)

12. (a) Explain the following with respect to the IEEE 802.3 standard CO2- U (16)

a) Physical layer specification
b) Medium Access

MAC Frame format

Or

(b) Suppose we want to transmit the message 1110001100 and protect it from errors using the CRC polynomial $x^3 + 1$. CO2- U (16)

(a) Use polynomial long division to determine the message that should be transmitted.(b)Suppose the rightmost bit of the message is inverted due to noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred?

13. (a) Explain in detail about Link State Routing with suitable and relevant neat diagrams CO3- Ana (16)

Or

(b) A company is granted the site address 145.70.64.0. It needs 9 subnets. Design the subnet and also find out the address range of each subnet. CO3- Ana (16)

14. (a) State and explain the need for the following TCP timers CO4- U (16)

(a) Retransmission timer
(b) Persistent timer
(c) Keep alive timer
(d) Time waited timer.

Or

	(b)	Many of the duties of the transport layer (flow control, error control) are also handled by the data link layer. Is this duplication necessary? Explain. Also explain the functions of transport layer in detail	CO4- U	(16)
15.	(a)	Discuss in detail about need and architecture of Simple Mail Transfer Protocol	CO5- U	(16)
		Or		
	(b)	Explain in detail about Secret Key and Public Key Method for securing user information	CO5- U	(16)