B.TECH. / B.TECH. - M.TECH. (DUAL DEGREE)

SIXTH SEMESTER EXAMINATION, 2022-23

COMPUTER NETWORKS

Time: **3:00 hrs.** Max. Marks: **40**

Note : **(i)** The question paper contains **Three** Sections.
(ii) Section- A is compulsory, Section-B and C contains internal choice.

SECTION-A

1. Attempt **ALL** parts of the following questions: **1 x 10 = 10**

(a) FDDI uses which type of physical topology? [BT-1,CO1,PO2]

(i) Bus **(ii)** Ring
(iii) Star **(iv)** Tree

(b) Ethernet system uses which of the following technology. [BT-2, CO1,PO2]

(i) Bus **(ii)** Ring
(iii) Star **(iv)** Tree

(c) What is the commonly used unit for measuring the speed of data transmission? [BT-1, CO1,PO2]

(i) Bytes per second **(ii)** Baud
(iii) Bits per second **(iv)** Both (ii) and (iii)

(d) Network security has been instrumental in providing security to different types of_____ [BT-2, CO1,PO2]

(i) Networks **(ii)** Nodes
(iii) Hosts **(iv)** Points

(e) If all devices are connected to a central hub, then topology is called. [BT2,CO1,PO2]

(i) BusTopology **(ii)** RingTopology(c)
(iii) StarTopology **(iv)** TreeTopology

P.T.O.

(f) The ..... layer changes bits on to electromagnetic signals. [BT-2, CO-4, PO-3]

(i) Physical (ii) Transport

(iii) DataLink (iv) Presentation

(g) Unlike IPv4, IPV6 does not include the following field in the base header. [BT-1, CO-3,PO]

(i) Next Header field (ii) Field for Fragmentation information

(iii) Flow Label (iv) Kind field

(h) Which class of IP address provides a maximum of only 254 host addresses per network ID? [BT-2, CO-4,PO-2]

(i) Class A (ii) Class B

(iii) Class C (iv) Class D

(i) In IP addressing scheme, class used for multicasting is: [BT-1, CO-4,PO-2]

(i) Class A (ii) Class B

(iii) Class C (iv) Class D

(j) .....defines where to deliver the IP-packets when the destination is not in the same network. [BT-2, CO-4,PO-1]

(i) Routing table (ii) Data table

(iii) Packet table (iv) Switch table

SECTION-B

2. Attempt any **TWO** of the following questions: **5 x 2 = 10**

(a) What is OSI Model? Explain in detail. [BT3,C01 , P03]

(b) Explain the following Network devices: Hub, Switch, Router and Modem? [BT4, C02 , P04]

(c) What is IP addressing? How is it classified? How is subnet addressing performed? [BT3, C03 , P02]

(d) Differentiate between connection oriented and connection less service? [BT4, C04 , P01]

SECTION-C

3. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) Explain transmission media guided and unguided media. Mention the characteristics that distinguish optical fiber? [BT5, C02, P02]

(b) A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames Per minute where each frame Carries an average of 10,000 bits. What will be the Throughput for this network? [BT4, C02, P02]

4. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) Discuss Different Switching Techniques? [BT-3, CO-2,PO-2]

(b) What is IPv6? Explain its advantages over IPv4. Also explain its frame format. [BT-4, CO-3,PO-1]

5. Attempt any **ONE** of the following questions: 4 x 1 = 4

(a) Explain Distance Vector Routing in computer Network architecture with an example. [BT-4, CO-3,PO-1]

(b) An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows: [BT-3, CO-3,PO-3]

(i) The first group has 64 customers; each needs 256 addresses.

(ii) The second group has 128 customers; each needs 128 addresses.

(iii) The third group has 128 customers; each needs 64 addresses.

(iv) Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations.

6. Attempt any **ONE** of the following questions: **4 x 1 = 4**

(a) Explain open and closed loop congestion control mechanism in detail? [BT-3,CO-4,PO-3]

(b) Explain UDP and its segment format. Explain Domain Name System. [BT-3,CO-4,PO-3]

7. Attempt any **ONE** of the following questions: **4 x 1 = 4**

(a) Explain any **Three** of the following: [BT-6, CO5, PO2]

(i) SMTP **(ii)** TELNET

(iii) FTP **(iv)** POP3?

(b) What is Quality of Service (QoS)? What are congestion, delay, and jitter? [BT-4, CO5, PO3]