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B.Tech-4th(CSE/IT)

Computer Networks

Full Marks : 50

Time : $2\frac{1}{2}$ hours

Answer **all** questions

The figures in the right-hand margin indicate marks

Symbols carry usual meaning

1. Answer *all* questions : 2 × 5

- (a) What is the maximum data rate (in bits/sec) of a noisy channel with a bandwidth of 2 kHz and a signal-to-noise ratio of 7
- (b) What is piggybacking and its use in networking ?
- (c) Differentiate traditional ethernet and fast ethernet.

(Turn Over)

(2)

- (d) What is NAT and its use ?
- (e) Discuss the use of HTTP in computer network.
2. (a) Differentiate between OSI and TCP/IP layer. Explain each layer protocols in brief. 4
- (b) What is topology ? Explain various topology along with its advantages and disadvantages. 4
- Or*
- (c) Discuss various networking devices used in the network with its advantages and disadvantages. 4
- (d) What is virtual circuit switching ? Explain with suitable diagram. 4

(3)

3. (a) A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is $x^4 + x + 1$. What is the actual bit string transmitted ? 4
- (b) What is Stop and Wait ARQ protocol ? With the help of frame sequence diagram explain how a corrupted frame is handled by Stop and Wait ARQ protocol. 4

Or

- (c) What is error detection ? Discuss various types of error detection method. 4
- (d) A 3000 km long trunk operates at 1.536 Mbps and is used to transmit 64-byte frames and uses sliding window protocol. If the propagation speed is 6 $\mu\text{sec} / \text{km}$, how many bits should the sequence number field be ? 4

(4)

4. (a) Describe working of CSMA/CD random access protocol.

4

- (b) A packet addressed to a destination address 200.150.68.118 arrives at the router. It will be forwarded to the which interface ID ? Explain.

4

Subnet Number	Subnet Mask	Interface ID
200.150.0.0	255.255.0.0	1
200.150.64.0	255.255.224.0	2
200.150.68.0	255.255.255.0	3
200.150.68.64	255.255.255.224	4
Default		0

Or

- (c) What is controlled access protocol ? Describe reservation controlled-access methods and its advantages and disadvantages.

4

(5)

(d) What is addressing ? Explain various class of classful addressing and need for classless addressing. 4

5. (a) What is ARP? Explain its working. 4

(b) What is IPV4 ? Describe IPV4 packet format with diagram. 4

Or

(c) What is UDP protocol and its importance in computer network ? 4

(d) What is quality of service in computer network ? Is it affected due to congestion in the network ? Justify your answer. 4

6. (a) Differentiate between client server and peer to peer model along with suitable diagram. 4

(b) What is DNS ? Describe the name resolution process using DNS. 4

(6)

Or

- (c) What is FTP ? Explain the process of establishing connection between client and server. 4
- (d) Explain the use of SMTP protocol for e-mail services ? 4