Total No. of Questions : 12] [Total No. of Pages :3

P1479

[3764] - 241
B.E. (Electronics)
COMPUTER NETWORKS
(2003 Course)

Time : 3 Hours] *[Max. Marks:100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Suggest various network topologies for:

i) Broadcast networks

ii) Point to Point network **[8]**

List their advantages and disadvantages.

b) What is the principal difference between connectionless communication and connection oriented communication. **[4]**

c) What are headers and trailers and how do they get added and removed? **[4]**

OR

Q2) a) Explain the service primitives used in connected oriented services. **[6]**

b) List similarities and differences between OSI and TCP/IP reference model. **[6]**

c) Which OSI layer is responsible for the following? **[4]**

i) Determining the best path to route packets.

ii) Providing end-to-end communication with reliable service.

iii) Determining the size of packets.

iv) Carrying the packets.

P.T.O.

Q3) a) Give a brief description of the application and limitation of the following types of transmission media: **[12]**

i) Twisted pair.

ii) Fiber optic cable

iii) Coaxial cable

iv) Microwaves.

b) Calculate the maximum achievable data rate for a binary signal transmitted over a 3kHz channel with SNR 20dB. **[4]**

OR

Q4) a) Explain why bandwidth of twisted pair and coaxial cable decreases with distance. **[4]**

b) It is required to transmit a data at a rate of 64kbps over a 3kHz telephone channel. What is the minimum SNR required to accomplish this? **[4]**

c) Explain packet, circuit and message switching with examples. **[8]**

Q5) a) Let $g(x)=x^3+x+1$. Consider the information sequence 1001.

i) Find the codeword corresponding to the information sequence given.

ii) Suppose that the code word has a transmission error in the first bit. What will be the syndrome generated at the receiver? **[6]**

b) Discuss in detail the HDLC protocol. What are the similarities and differences between PPP and HDLC? **[6]**

c) Write down the problems that are encountered in building the bridge between: **[6]**

i) 802.3, 802.4

ii) 802.4, 802.5

OR

Q6) a) Suppose transmission channels become virtually error free is the data link layer still needed? Justify. **[4]**

b) What is sliding window protocol? What is the importance of the size of window? **[8]**

c) What is piggybacking? What is the significance of piggy backing? Give with an example. **[6]**

SECTION - II

Q7) a) List the goals of the Network Layer. Define routing, flooding. [8]

b) Explain the congestion prevention policies of transport layer, network layer and data link layer. [6]

c) How does a router differ from a bridge? [4]

OR

Q8) a) Answer briefly crash recovery in the transport layer? [6]

b) List the properties of routing algorithm used in computer networks. What is the 'Optimality-principle'? [6]

c) Explain various congestion control techniques. [6]

Q9) a) What is DNS? What resource records are associated with it? [6]

b) Explain the five basic functions in Electronic mail. [4]

c) Explain DES. [6]

OR

*Q10)*a) Discuss security issues of intranet & internet. [4]

b) Write short note on : [12]

i) Video on Demand.

ii) Web page in HTML.

iii) Email.

*Q11)*a) Draw IP address formats for Class A, Class B, C, D and E using suitable example and give range of each. What is the significance of sub-netting? [8]

b) What are the major goals of IPv6. Give the difference between IPv4 and IPv6. [8]

OR

*Q12)*a) Explain in detail the layered architecture of TCP/IP protocol suite. [4]

b) Write short note on : [12]

i) FTP.

ii) BOOTP.

iii) SMTP.

iv) Trace route.