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53 (CS 402) CPNW

2021

COMPUTER NETWORKS

Paper : CS 402

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

PART – A

1. 2×10=20

(a) Write the differences between half duplex and duplex channel.

(b) What happens with the headers when a packet moves from upper to lower layer in OSI model ?

(c) UDP is a connection _____ and _____ layer protocol.

(d) If you are watching a movie or youtube which transport layer protocol should be used and why ?

Contd.

(e) Write the differences between STP and coaxial cable.

(f) In wireless network which of the following is used?

(i) CSMA/CD

(ii) CSMA/CA

(iii) both (i) and (ii)

(iv) None

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(g) Define the latency of a network.

(h) Why ARP is used?

(i) Write differences between bridge and router.

(j) In IPv6 the length of IP is _____ bits.

PART – B

*Attempt **any four**.*

2. (a) With a diagram discuss the functions of different layers in OSI model.

(b) What is the significance of a coaxial cable where 100 base 10 is written?

(c) Do you think that the bit rate and band rate of a channel is always same. — Justify

10+3+7=20

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3. (a) Consider a 10 *Mbps* link is established between Earth and Mars. The distance between Earth to Mars 54·6 million *km*, data travels over the link at 3×10^8 *m/s*.

(i) Compute the minimum RTT for the link.

(ii) Compute delay × bandwidth using RTT as delay.

(iii) If the mission control station wish to download a picture of 10 *MB*, how much time is required ?

(b) What is the significance of delay × bandwidth ?

(5×3)+5=20

4. (a) Show that using 2D parity receiver can correct one bit error but not 2 bit error.

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(b) Consider we want to transmit 10110001, and for error protection x^3+1 CRC polynomial is used —

(i) Determine the codeword from the sender side

(ii) Suppose the right most bit of the message is inverted. Show the steps how receiver can recognize it.

(c) Write the differences between flow and congestion control. 5+10+5=20

5. (a) Evaluate the ranges of the IP addresses in Class A, Class B and Class C network.

(b) What are the differences between static and dynamic routing?

(c) Write the steps to resolve the domain name "cse.cit.ac.in". 10+5+5=20

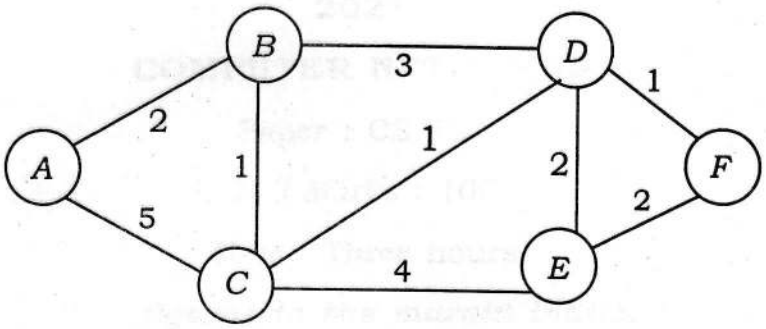
6. 10+10=20

(a) Differentiate between :

(i) Circuit switching and Packet switching

(ii) Virtual circuit and Datagram

(b) Use any algorithm to find the shortest path from A (source) to F (destination) :



7. Write short notes on : 5×4=20

(i) Piggybacking

(ii) Bit stuffing

(iii) SNAT *vs* DNAT

(iv) Gateway

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