53 (IT 403) CPNW

2014

COMPUTER NETWORKS

Paper : IT 403

Full Marks : 100

Time : Three hours

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

*Answer **any five (5)** questions out of **eight (8).***

1. *(a)* What are the some factors that determine whether Communication System is a LAN, MAN or WAN ? 5

   (b) How throughput is doubled in slotted ALOHA in Comparison to Pure ALOHA ? Explain it. 9

   (c) What is the difference between physical address, logical address and port address ? Give an example. 6

2. *(a)* Explain in detail how connection is established and terminated in TCP protocol. What are the advantages of TCP protocol over UDP protocol ? 8+2

(b) What is the purpose of sequence number in TCP header ? 4

(c) Explain ARP and RARP protocol. What is an ARP Cache ? 4+2

3. *(a)* Enumerate on the various reasons that are present behind the transition from IPV4 to IPV6. 8

(b) What is a Collision ? How CSMA/CD improves the performance of CSMA protocol ? 2+4

(c) How many addresses are spanned by the CIDR address 205.12.192.0/20 and what range do they span ? 6

4. *(a)* How do subnetting and supernetting enhance scalability ? What is the purpose of subnet mask and a supernet mask ? Is a subnet mask visible outside an IP network ? Is a CIDR mask visible outside an IP network ? 4+4+2+2

(b) What field in IP datagram header is used to avoid forwarding datagram's endlessly though loops ? How is the header used to accomplish that ? 2+2

(c) Why medium access channel is required and what is its function ? 4

5. (a) What do you mean by congestion ? Describe the token bucket algorithm. What is the difference between token bucket and leaky bucket algorithm. 2+4+4

(b) What is hamming code ? Fund out the code word for the user data 10101101. 2+4

(c) What is DNS ? What is the primary purpose of DNS ? 2+2

6. (a) A window holds bytes 2001 to 6000. The next byte to be sent is 3001. Draw a figure is show the situation of the window after the following events 4+4

(i) An ACK segment with the acknowledgment number 3500 and window size advertisement is 4000 received.

(ii) A segment carrying 1500 bytes is sent.

2 (b) What is giga-bit ethernet ? Differentiate it from fast ethernet ? 4+3

(c) A router has the following entries (CIDR) in its routing table 5

Address/Mask	Next hop
135.46.56.0/22	interface 0
135.46.60.0/22	interface 1
192.53.40.0/23	Router 1
Default	Router 2

Each of the following IP addresses, what does the router do if a packet with that address arrives

(i) 135.46.63.10

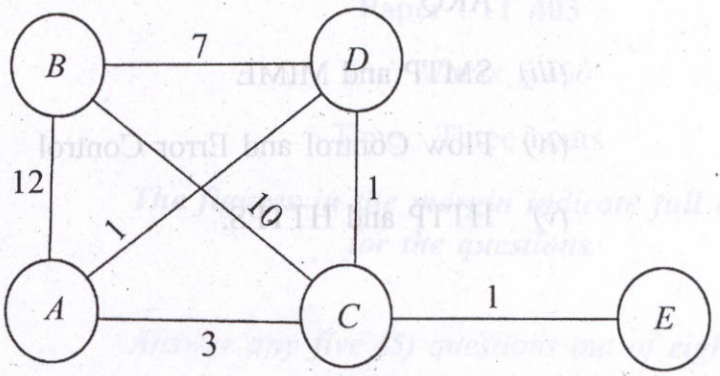
(ii) 135.46.57.14

(iii) 135.46.52.2

(iv) 192.53.40.7

(v) 192.53.56.7

7. *(a)* What is the difference between static and dynamic routing ? Given below network topology and assume that each node initially knows the costs to each neighbors. Consider the distance vector algorithm and show the distance table entries at node *D*. 4+6



(b) What are the different error detection methods ? Explain the CRC error detection technique using generator polynomial $X^4 + X^3 + 1$ and data 11100011. 2+8

8. *(a)* A stop and wait protocol use 100*kbps* link, which have the round-trip propagation delay 250*ms*. Find out the percentages of time the sender is blocked for Acknowledgement, if the frame size is 100*bits*. 5

(b) Differentiate the following : ***(any three)*** 3×5

(i) Connection-oriented and Connection-less

(ii) Selective-repeat ARQ and Go-Back-N ARQ

(iii) SMTP and MIME

(iv) Flow Control and Error Control

(v) HTTP and HTTPS.
