

B.E. / B.Tech. DEGREE SEMESTER EXAMINATION, APR/MAY 2011

COMPUTER SCIENCE AND ENGINEERING

Regulation 2008

Fifth Semester

CS9305 – DATA COMMUNICATION AND COMPUTER NETWORKS

Time: Three hours

Maximum: 100 marks

Answer ALL Questions
PART - A (10 x 2 = 20 Marks)

1. List basic hardware and software requirements for establishing computer network.
2. Differentiate Upward and Downward multiplexing.
3. What is collision detection?
4. What is a bridge? Give its types.
5. Find the class of each IP address
 - a. 00000 000 1111 0000 11111111 00110011
 - b. 10000 000 1111 0000 11111111 00110011
6. State the difference between classless and classful addressing.
7. Define unicast and multicast addressing?
8. State why telnet uses network virtual terminal?
9. State a advantage of hierarchical name space over flat name space.
10. What are the elements of WWW?

PART - B (5 x 16 = 80 Marks)

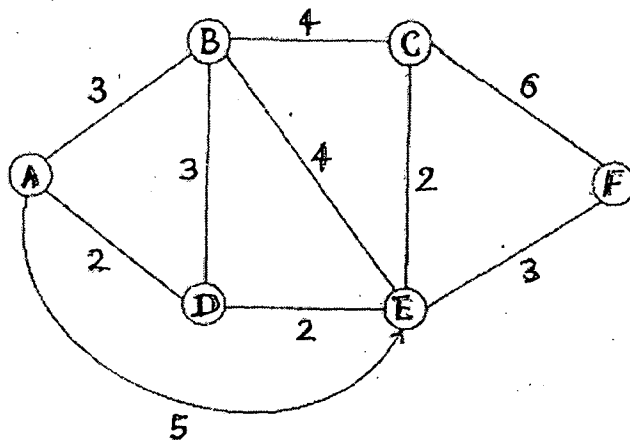
- 11.i) Sketch the Manchester, Differential Manchester, Binary encoding, RZ and NRZ - I for the bit stream: (10)
11111000101010
- ii) Differentiate Frequency Hopping Spread Spectrum and Direct Sequence Spread Spectrum with examples. (6)

- 12a.i) Given a 10 bit sequence frame: 101 11 01 1 0 and a divisor of 1101, find the CRC (5)
- ii) Construct the Hamming code for the bit sequence: 11100010 and show the process of error correction at the 7th location. (5)
- iii) Explain the function of various fields in IEEE 802.5 frame.

(Or)

- b. Compare and contrast TDMA, FDMA, CDMA and SDMA with examples. (16)

- 13a. Consider the following network. With the indicated link cost, (16)
- i) Give initial and final distance – vector table for the node G.
- ii) If the link D-C fails. Give the tables of G after D and C reported their link failure.
- iii) Use Dijkstra's shortest-path algorithm to compute the shortest path from G to all network nodes



(OR)

- b. i) Suppose a TCP message that contains 2,048 bytes of data and 20 bytes of TCP header is passed to IP for delivery across 2 networks of the internet. The first network uses 14-byte header and has an MTU of 1,024 bytes; the second uses 8-byte headers with an MTU of 512 bytes. Each network's MTU defines the size of the largest IP datagram that can be carried in a link layer frame. Give the sizes and offsets of the sequence of the fragments delivered to the network layer at the destination host. Assume all IP headers are 20 bytes. (8)

- ii) Define switching. Compare the performance of circuit switching & packet switching. (8)

14a.i) Consider a router that is managing three input flows and one output flows, it receives the packets all at about the same time, in the order listed. Give the order in which the packets are transmitted assuming. (8)

ii. Fair queuing

iii. Weighted fair queuing with flow2 has twice as much share as flow1 and flow3 having 1.5 times as much share as flow1.

Packet	Size	Flow
1	200	1
2	200	1
3	160	2
4	120	2
5	160	2
6	210	3
7	150	3
8	90	3

- ii) State the need for reservation protocols. Explain how RSVP is used in making reservations. (8)

(Or)

b.i) Explain the operation of slow start congestion control algorithm in TCP with examples. (8)

ii) Consider a RED gateway with $\max_p = 0.02$, and with an average queue length halfway between the two thresholds. (8)

a) Find the dropping probability P_{count} for $count = 1$ and $count = 50$.

b) Calculate probability that none of the first 50 packets are dropped.

15a.i) Discuss the message format of e-mail. With suitable example explain how message is transferred between and receiver. (8)

ii) Show the request and response message that retrieves the document from `/usr/doc/doc1.doc` to `usr/deads/doc1.doc` (8)

(Or)

b.i) Is recursive resolution of an DNS resolver faster than interactive one? Justify (6)

ii) With examples explain how FTP is used in File transfer. (10)
