
# KINGS

COLLEGE OF ENGINEERING


**DEPARTMENT OF COMPUTER SCIENCEAND ENGINEERING**

**ACADEMIC YEAR 2009-2010**

**Subject Code/Name : Computer Networks Year/Sem : III/V**

## UNIT – I DATA COMMUNICATION

### PART-A ( 2MARKS)

1. Define Data communication
2. What are the five important components o f data communications? (Anna Univ Nov 2008)
3. What are the various forms of data?
4. What are the various types of data flow?
5. List two advantages of layering principle in computer networks.
6. With the example explain half duplex communication.
7. Name four topologies of computer networks.
8. Suggest two points to improve the performance of network.

9 Define Distributed Systems

10. Define Distributed Processing
11. Define Transit time and Response time
12. Define protocol.
13. Why are protocols needed?
14. What are the key elements of a protocol?
15. What is the advantage and disadvantage of RS-232.
16. What is the Null modem?

17. Define Topology.
18. Define standards.
19. Why are standards needed?
20. Who are the standard committee?
21. Define OSI model
22. What are the seven layers of OSI Model?
23. Define Network architecture
24. Define Protocol and give its key elements (Nov /Dec 07)
25. What are the design factors for transmission media?
26. Difference between Guided media and un guided media.
27. Define line coding.
28. What are most popular modems?
29. Define network.
30. What are the criteria for networks for networks?
31. Define point to point and Multi point.
32. What is bit pattern?
33. Define data rate and signal rate
34. Define Bandwidth
35. What are the line coding scheme available?
36. How does NRZ – L differ from NRZ – I ?
37. Define Modem
38. What are the standards available in modem?
39. Discuss the mode for propagating light along optical channels
40. What is the difference between a passive and an active hub?
41. What are the three criteria necessary for effective and efficient networks?
42. For n devices in a network , what is the number of cable links required for a mesh , ring , bus and star topology (Anna University , Nov 2008)

43. What are the advantages of wireless media over wired media . (Anna Univ Nov 2008)

44. List the issues associated with RS232 standard? (Nov /Dec 07)

## PART-B ( 16 MARKS)

1. What are the functions of OSI layers? Discuss. **(16)**
2. (a).Explain the types of line coding with neat diagrams. **(8)**
   (b).Explain about RS-232 interface. **(8)**
3. Explain in detail about the types of topologies. **(16)**
4. Explain detail about the transmission media for data transmission. **(16)**
5. (a). What is a protocol? List the three key elements of a protocol. **(8)**
   (b). With relevant examples differentiate between simplex, half duplex and full duplex communication. **(8)**
6. What is the difference between a protocol and a service interface? Explain in terms of a ISO seven layer model. **(16)**
7. (a) List the four properties by which transmission media can differ **(4)**
   (b).Three packet switching networks each contain n nodes. The networks has a star topology with a central switch, a ring respectively and a third is fully interconnected with a wire form every node to every other node. What are the best, average and worst case transmission paths in hops? **(12)**
8. (a) Perform a comparative study between the ISO-OSI model and TCP/IP reference model. (Anna Univ Nov 2008) **(8)**
   (b) Discuss about major component of an optical communication system . **(8)**
9. Distinguish between Point to Point and multi-point links with relevant diagram. **(16)**
10.. Write shot notes on
   (a). Network Hierarchy **(4)**
   (b). Ethernet **(4)**
   (c). Token ring **(4)**
   (d). Ring topology **(4)**

# UNIT II DATA LINK LAYER

## PART-A (2 MARKS)

1. Define block coding and give its purpose?
2. What is byte stuffing?
3. Write the importance of CRC in the network.
4. Sketch the Manchester encoding for the bit steam 0001110101.
5. What is IEEE 802.4 Standard?
6. Define throughput.
7. Define collision?
8. What is cyclic Redundancy check ?
9. List out the functions of data link control.
10. Define errors.
11. List out the types of error.
12. Define error detection.
13. Define error correction.
14. List out error correction mechanism.
15. Define Block coding.
16. Draw the process of error detection in block coding ?
17. Define hamming distance.
18. Find the Hamming distance
19. Define simple parity check code.
20. Define flow control and Error control
21. Whether Collision occurred in IEEE 802.5 LAN? Justify.
22. Define ARQ
23. Define Piggybacking
24. Define sliding window
25. Define HDLC and its transfer mode.

26. List out the frames in HDLC and its purpose.

27. Draw the neat diagrams of frame format of various frames of HDLC.

28. Define LAN & List out the technologies.

29. What are the two sub layers of Data Link layer and define its functionalities.

30. Draw the frame format of Ethernet.

31. List out the Ethernet types.

32. Define CSMA /CD

34. Define the frame format of IEEE 802.5

35. Define FDDI.

36. Define SONET .What are the devices used in SONET. (Nov /Dec 07)

37. What are the four SONET layers?

38. How does a single bit error differ from Burst Error .(Anna Univ Nov 2008)

39. Compare a piconet and scatternet (Anna Univ Nov 2008)

40. What is the level of reliability provided by the simple parity scheme in error detection (Anna Univ Nov 2008)

## PART-B (16 MARKS)

1. (a). Define CRC. Explain CRC generator & CRC checks in detail with one example **(10)**
   (b). Explain in detail about error correction using Hamming code. **( 6 )**
2. Explain HDLC and explain it in detail. **(16)**
3. (a). Given a 10 bit sequence 1010011110 and a divisor of 1011 find the CRC. Check the answer **(10)**
   (b). Bit stuff the following data **(6)**
   i. 000111111011111001111001111111001
   ii. 000111111111111111111111111111111111110011111001
4. What is IEEE 802.3? What are the types of Ethernet? Discuss. **(16)**
5. Discuss Token Bus & Token Ring networks in detail. **(16)**
6. Define FDDI & its needs in detail. **(16)**
7. (a). What is SONET? **(2)**
   (b). Name some layers of SONET &its functions. **(6)**
   (c). Discuss SONET frame in detail with a neat diagram. **(8)**

8. a. Define bridges? **(2)**
   b. Difference between bridges and repeaters. **(4)**
   c. Explain the loop problems solved by bridges. **(10)**

9. (a) Discuss Limitations of STOp and Wait Protocol **(8)**

   (b) Explain how collisions are avoided and tokens are managed in the token ring LANs**.** **(8)**

10. (a) Explain in detail about Sliding Window protocol **(8)**

    (b) Explain how the collision are detected in resolved in the CSMA/CD protocol in the Ethernet LANS**.** **(8)**

11. Write short notes on.

    (a). GO Back NARQ **(8)**

    (b). Selective Repeat ARQ **(8)**

12. Explain the following Inter connection devices also discuss their uses
    (a). Repeater **(4)**

    (b). Bridge **(4)**

    (c). Switch **(4)**

    (d). Gateway **(4)**

# UNIT III NETWORK LAYER

## PART – A ( 2 MARKS)

1. What is subnetting? List down the reason for doing subnetting in IP networks. (Anna Univ Nov 2008)

2. Distinguish between networking and internetworking.

3. What are the devices used for internetworking?

4. What is the use of IP address?

5. State difference between classless and classful addressing in IPV4 ((Anna Univ Nov 08)

6. What is the difference between direct and indirect delivery.
7. What is the purpose of RIP.
8. What is the use of BGP.
9. What is the use of routing table.
10. Define Datagram.
11. Define Internet works?
12. Define Switching and What are the different type switching available.
13. What is the difference between packet switching and circuit switching?
14. What are the approaches in packet switching?
15. What is use the of Router?
16. What is the use of network layer?
17. What is MTU?
18. Define Fragmentation offset
19. Write the difference between bridge routers.
20. Find the error if any the following IP address.
    a. 111.56.045.78
    b. 75.45.301.14
21. What is datagram socket?
22. Write any four routing algorithm.
23. What is an IP address?
24. What are the two main elements of distance vector routing?
25. What is the role of packet lifetime?
26. Give the fields available in IP address.
27. What is meant by classful addressing?
28. Define Unicast, multicast and broadcast.
29. Compare Ethernet address with IP address.
30. What are the functions of IP Protocol?
31. Identify the class and default subnet mask of the IP address 217.65.10.7.
32. Distinguish between bridges and routers.

33. Is the size of ARP packet fixed ? Explain ((Anna Univ Nov 2008)

34. What do you meant by Loopback in IPV4?

## PART-B ( 16 MARKS)

1. Find the class of each IP address given suitable explanation. **(16)**

   a. 227.12.14.87

   b. 193.14.56.22

   c. 14.23.120.8

   d. 252.5.15.111

   e. 134.11.78.56

   f. 000 000 00 1111 0000 11111111 00110011

   g. 10000000 1111 0000 11111111 00110011

2. Discuss how DES Algorithm works. **(16)**

3. State the difference between Vector Routing and link state routing. **Nov/dec 08 (16)**

4. Discuss how these routing and link state routing techniques work. **(16)**

5. What is the subnet work address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0. **(16)**

6. What are the limitations of distance vector routing. How are they addressed in link state routing? **(16)**

7. Explain routing of mobile hosting. **(16)**

# UNIT IV TRANSPORT LAYER

## PART – A(2 MARKS)

1. What is the maximum case of UDP datagram?

2. What is the use of sequence numbers?

3. What is the source port numbers?

4. What is client process?

5. Name the policies that can precast congestion?

6. How are congestions control and quality of source hexapod?
7. What is the definition of burst data?
8. What is traffic shaping? Name two methods of shape traffic?
9. What determine the sender Window size in TCP
10. How is Resource Reservation Protocol related to integrated services
11. Define RTT.
12. What is Access rate ?
13. Define reliability and its aspects.
14. What is the methods to improve Qos?
15. What is necessity of flow control
16. What is multicast? What is the difference between unicast and multicast?
17. Define multiplexing. what are the two multiplexing strategies used in transport layer? (Anna Univ Nov 2008)
18. What are the services provided by the transport layer?
19. State why telnet uses network virtual terminal?
20. What is the service provided by TCP?
21. What is the purpose of Urgent pointer in the TCP header?
22. Define socket.
23. Define datagram socket.
24. Draw a neat diagram of a transport layer segment.
25. Define QoS.mention any four QOS metrics. (Anna Univ Nov 2008)
26. What do you meant by congestion?
27. Difference between UDP and TCP.
28. What are the types of congestion control? Explain.
29. Define flow control?
30. How are congestion control and quality of service related ? (Anna Univ Nov 2008)
31. Give the format for UDP datagram and give the meaning for each field. (Nov /Dec 07)

32. Define the term (i) Jitter (ii) socket Address (Nov /Dec 07)

## PART-B ( 16 MARKS)

1. A client uses UDP to send data to a server. The data are 16 bytes. Calculate the efficiency of the transmission at the UDP Level **(16)**
2. Explain the concepts behind in the Silly Window Syndrome. **(16)**
3. (a). Draw and explain in detail about the State Transmission diagram of TCP **(8)**
   (b). Explain in detail about congestion avoidance in TCP **(8)**
4. (a). Define UDP. **(2)**
   (b). Explain the segment format of UDP **(6)**
   (c). Explain in detail about congestion control **(8)**
5. (a). Explain the three phases of TCP **(8)**
   (b). Explain the segment format of TCP **(8)**
6. Explain in detail about various techniques to improve Qos **(16)**
7. Explain in detail about integrated services **(16)**
8. (a). Discuss how multiplexing and demultiplexing is done in the transport layer. **(8)**
   (b). Explain in detail the mechanism in transport layer for controlling congestion. **(8)**

# UNIT –V-APPLICATION LAYER

## PART – A ( 2 MARKS)

1. Define authentication and name any two authentication protocols.
2. List any two main types of DNS messages.
3. What is FDDI?
4. State why telnet uses network virtual terminal ?
5. How does the user gets E-mail from the message transfer agent?
6. What is the importance of cookies?
7. State the goals behind ISDN?
8. What is telnet used for ? Discuss.
9. Define security in networking.
10. State Why telnet uses network virtual teriminal?
11. What are the elements of WWW?

12. What are the four main properties of HTTP?
13. Describe why HTTP is designed as a stateless protocol.
14. What do you mean by active web pages?
15. What are the transmission modes of FTP?
16. Compare HTTP and FTP.
17. What are the types of source records?
18. What do you meant by FTP? What is the difference between FTP and TFTP. (Anna Univ Nov 2008)
19. What is the function provided by FTP?
20. Draw the basic model of FTP.
21. What are the things supported by SMTP?
22. Draw the General format of HTTP request messages.
23. Define SMTP?
24. Define DNS and what is the use of DNS?
25. Give example for hierarchy in DNS?
26. What are the things define by URL?
27. What are the aspects of information security?
28. Name some security services.
29. What are the types of security attacks?
30. Define AES.
31. Compare plain text and cipher text?
32. what is symmetry key algorithm? List the limitations (Anna Univ Nov 2008)
33. what are all the services provided my E-mail?
34. Define HTML?
35. Define Fire walls?
36. How are HTTP similar to SMTP. (Anna Univ Nov 2008)

# PART-B ( 16 MARKS)

1. Define DNS and explain the major sections of DNS in detail? **(16)**
2. With a neat diagram explain the basic model of FTP? **(16)**
3. What is public key cryptography and explain RSA in detail with one example. **(16)**
4. Explain various types of substitution techniques. **(16)**
5. (a). SMTP, FTP and HTTP are protocols to transfer messages from one point to another. Compare and contrast their use **(8)**

   (b). Write short notes on HTTP Request and Response messages **(8)**
6. Explain in detail about SMTP. **(16)**
7. Explain the architecture, resolving of domain names and other services provided by domain name system(Nov/Dec 08) **(16)**

8. Explain the architecture, client server interaction in fetching the web pages and HTTP of world wide Web.(Nov/Dec 08) **(16)**