060010315 – DSE4 Computer Networks
Question Bank

Unit - 1

Introduction

Short Questions

1. State the term data with respect to computer network.
2. What is data communication?
3. Define following terms:
   - Computer Network
   - Protocol
   - Broadcast
   - Topology
   - Delivery
   - Accuracy
   - Timeliness
   - Jitter
   - Real time transmission
   - Message
   - Sender
   - Receiver
   - Transmission medium
4. Write the format in which data are represented.
5. List different category of network.
6. Enlist types of connection available in network.
7. List four basic types of topology. Identify which topology is best for local area.
8. What is the difference between half-duplex and full-duplex transmission mode?
9. Identify five component of data communication system.
10. What are the advantages of multipoint connection over point to point connection?
11. Define OSI model?
12. Enlist seven layers of OSI model.
13. List any two applications of computer networks.
14. Write the situations in which LAN, MAN and WAN are used.
15. What is bus topology? Write any two disadvantage of bus topology.
16. Write any two points of differences between bus topology and ring topology.
17. Enlist responsibility of physical layer and application layer.
18. Which layer is responsible for routing of packet?
19. Which layer is responsible for packet-to-packet delivery of source to destination?
20. Define physical address and logical address.
21. Write any two advantages and disadvantages of computer network.

Long Questions

1. Describe components of data communication with characteristics.
2. Explain how data can flow from one device to other device.
3. What is topology? Explain any three types of topology with appropriate diagrams.
4. Compare physical topology and logical topology.
5. Explain logical bus and physical bus topology in brief.

6. Explain logical ring and physical ring topology in brief.
7. What is OSI model? Explain each layer of OSI model in brief.
8. How OSI model is layered architecture?
9. Which layer is responsible for routing? Explain it with all its responsibility.
10. Which layer is responsible for process-to-process delivery of packet? Explain it with all its responsibility.
11. Write a short note on presentation layer.
12. Explain the layer which is responsible for framing.
13. Write a brief note on physical layer of OSI model.
14. Identify which layer is responsible for encryption and decryption of data and explain it in detail.
15. Describe application layer with its responsibility in brief.
16. Draw a hybrid topology with star backbone and four ring network.
17. Draw a hybrid topology with a ring backbone and three bus network.

Unit - 2

Physical and Data Link Layer

Short Questions

1. What is transmission medium? Where is the transmission media located?
2. Who was the founder of telegraph? Communication by telegraph was depending on which medium?
3. List out categories of transmission media in context of telecommunication.
4. Give major reason for use guided and unguided media.
5. Which conductor is use for twisted pair and coaxial cable?
6. Give purpose of twisted pair cable.
7. Write down the need of coaxial cable connector and give name of most common connector.
8. Fiber optic cable is made up of what? Write down work of fiber-optic cable.
9. Which modes are supported for propagation light?
10. Write down two upside and downsides of optical fiber.
11. List out four characteristics of microwave propagation.
12. Write main two differences between detection and correction.
13. How can errors be detected using code block?
14. What can be the size of frame?
15. What is stop-and-wait protocol?
16. How error correction is done in stop-and-wait protocol?
17. How Go-Back-N automatic repeat request works?
18. What should be the window size of sender and receiver in selective repeat ARQ?
19. For which reason CSMA/CD is used?
20. If station finds that channel is busy than what happen in CSMA/CA?

Long Questions

1. Explain transmission media in detail.
2. Write a detail note on twisted-pair cable.
3. Explain coaxial cable.
4. Fiber-optic cable is made up of what? Explain it in detail.
5. State the advantage and disadvantage of fiber-optic cable.
6. Unguided media is referred as what? Which are the three waves of wireless transmission? Explain any one of them in detail.

7. Explain the types of error in detail with example and give small idea about redundancy.
8. List two types of framing and explain it in detail.
9. How flow control is differing from error control? Explain it with example.
10. Which protocols are belongs from noiseless channel? Explain one of them in detail.
11. How stop-and-wait protocol works. Explain in detail.
12. Which protocols uses error control? Write detail note on them.
13. Write a detail note on Go-Back-N automatic repeat request.
14. Discuss the method that is used to minimize the channel collision and increase the performance.
15. Describe the flow diagram of three persistence methods.

Unit - 3

Ethernet

Short Questions

1. The data link layer of IEEE has subdivided into which two sub layer?
2. What is the difference between LLC and MAC?
3. Give the full form of DSAP and SSAP.
4. What is the need of LLC?
5. Which are the four generation of Ethernet?
6. Draw the Ethernet frame with its fields.
7. What is the meaning of preamble and start frame delimiter in context of Ethernet frame?
8. Give an example of an Ethernet address in hexadecimal notation.
9. Give a key difference between uni-cast destination address and broadcast address.
10. List out goals of fast Ethernet.
11. List out categories of standard Ethernet.
12. What is the responsibility of transceiver?
13. Which topologies are used by 10Bse2 and 10Base-T Ethernet?
14. Enlist the goals of Gigabit Ethernet.
15. Differentiate full duplex mode and half duplex mode in terms of Gigabit Ethernet.
16. What is the reason behind no collision in full-duplex mode of Gigabit Ethernet?
17. Draw topologies for Gigabit Ethernet.
18. Which are the three methods define for half duplex mode related to Gigabit Ethernet?
19. Why Gigabit Ethernet cannot use the Manchester encoding scheme?
20. Write goals of the Ten-Gigabit Ethernet.

Long Questions

1. The data link layer of IEEE has subdivided into which two sub layer? Explain both of them in detail.
2. Explain how MAC sub-layer governs the operation of the access method in the standard Ethernet.
3. Which Ethernet was designed to compete with LAN protocols such as FDDI or fiber channel? Describe it in detail.
4. Explain Gigabit Ethernet in detail.
5. Explain the topologies of Gigabit Ethernet.

Unit - 4

Network Layer

Short Questions

1. Internetwork is made up of which network?
2. Network layer is responsible for what?
3. Which two layers are jointly responsible for data delivery on the network from one node to next node?
4. Which layer at source is responsible for creating packet from the data coming from another protocol?
5. Header of packet contains which information?
6. Why the internet has chosen the datagram approach for switching in network layer?
7. Give the key difference between connection oriented and connectionless service for network layer?
8. What is the difference between direct and indirect delivery?
9. List out all forwarding technique?
10. What is the work of Next-Hop Method versus Route Method?
11. Which technique is used to reduce the routing table and simplify the searching process?
12. In which situation we can use geographical routing?
13. What is metrics?
14. Routing protocol is combination of what?
15. What is the key difference between intra and inter domain routing?
16. For which purpose distance vector routing is used?
17. State the consideration through which distance vector routing directly implement using RIP?
18. On which two occasion LPSs are generated?
19. List out the types of links?
20. List four sets of actions which are required to ensure that each node has the routing table for showing the least cost node to every other node.
21. In which situation virtual link is created?
22. Write one task of every link.
23. What is the principle of path vector routing?
24. Autonomous system is divided in which three parts?
25. What is optional non-transitive attribute?

Long Questions

1. Draw the diagram of network layer at the source, router and destination and explain it.
2. Explain direct and indirect delivery using diagram.
3. Explain forwarding techniques in detail.
4. Discuss intra and inter-domain routing in detail.
5. Explain distance vector routing and link state routing using example.
6. Explain path vector routing in detail.

Unit - 5

Transport Layer

Short Questions

1. What is node-to-node delivery?
2. What is host-to-host delivery?

3. Define the terms: Client, Server.
4. The IANA has divided the port numbers into three ranges. Which are they?
5. What is socket address?
6. Which two identifiers are needed for process-to-process delivery?
7. Write key difference between multiplexing and de-multiplexing.
8. UDP is called as connectionless protocol. Why?
9. Draw format of user datagram (UDP).
10. Write down the purpose of using encapsulation and de-capsulation by UDP.
11. Which are the well-known ports used with UDP?
12. Why UDP packets are also called as datagram?
13. What happens if the checksum does not include pseudo-header?
14. List out the use of UDP.
15. Why TCP is called connection oriented and reliable transport protocol?
16. Write steps that occur when a process at site A wants to send and receive data from another process at site B in context of TCP.
17. Which are the well-known ports used by TCP?
18. Draw TCP segment format.
19. What is the value of acknowledgement number field in TCP segment format?
20. Which three phases are required for connection oriented transmission in TCP?

Long Questions

1. Explain the working of process-to-process delivery in detail.
2. Explain how multiplexing and de-multiplexing do work with diagram.
3. Explain the three ranges of protocol divided by IANA.
4. Explain multiplexing and de-multiplexing using diagram.
5. Differentiate connectionless and connection-oriented services.
6. UDP is known as connectionless and unreliable protocol. Why?
7. Explain UDP format in detail with the help of diagram.
8. List out all the UDP operations and explain them, writ down the usage of UDP.
9. Explain the services of TCP.
10. Diagrammatically explain connection establishment using three way handshaking.

Unit - 6

Presentation and Application Layer

Short Questions

1. What is encryption and decryption?
2. For what purpose application layer is used?
3. What is the responsibility of application layer?
4. How a DNS client/server program can support an e-mail program to find the IP address of an email recipient.
5. How many columns are there in host file? Which are they?
6. What is the main disadvantage of flat name space?
7. Which are the three part of hierarchical name space?
8. For which purpose domain name space was designed?
9. Write the key difference between fully qualified and partially qualified domain name.
10. Define the term: zone, zone file.
11. Which are the two main types of servers defined by DNS?
12. What is primary server? What is the responsibility and use of primary server?

13. What is secondary server?
14. Define zone transfer.
15. Domain name space is divided into which three sections?
16. Who defines the registered host according to their generic behaviour?
17. What is resolver?
18. How recursive resolution differs from iterative resolution?
19. How it can be said that HTTP functions as a combination of FTP and SMTP?
20. What is request line and status line?
21. When TELNET was designed?
22. Which three main components are there in email system?
23. How any user agents are required when the sender and receiver of an e-mail are on the same system?
24. Which two user agents are required when the sender and receiver of the e-mail are on two different systems?
25. List out the field which are containing by each email.
26. Which are the five header defined by MIME?
27. What is SMTP?
28. List out the extra functions which are provided by IMAP4 compared to POP3.
29. Why FTP uses the service of TCP?
30. Why FTP uses the same approach as SMTP?

Long Questions

1. What is encryption and decryption? Explain the importance of application layer.
2. Explain the uses of DNS service with help of diagram.
3. Discuss flat and hierarchical name space in detail with the help of diagram.
4. Compare and contrast full and partially qualified domain names.
5. Explain two types of server defined by DNS in detail.
6. How generic domain is differing from country domain? Give example of each.
7. Explain mapping of name to addresses and vice-a-versa.
8. Describe the architecture of electronic mail.
9. What is user agent? Discuss the services provided by user agent with the help of a diagram.
10. Explain in detail five headers of MIME that can be added to original e-mail header section to define the transmission parameter.
11. Write a detail note on SMTP.
12. Differentiate POP3 and IMAP4.
13. Discuss File Transfer Protocol in detail.
14. Identify the protocol that is mainly used to access data on the world wild web. Also discuss the identified protocol in detail.