

**SIDDHARTHA INSTITUTION OF SCIENCE & TECHNOLOGY: PUTTUR (AUTONOMOUS)**

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**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code:** Data Communication & Networking

(18EC0414)

**Year & Sem:** III-B.Tech. &II-Sem.

**Course & Branch**: B.Tech – ECE

**Regulation:** R18

UNIT –I

**INTRODUCTION TO DATA COMMUNICATION AND NETWORKS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | a | List the different network criteria. | | [L1][CO1] | **[2M]** |
| b | Why are protocols needed? | | [L3][CO1] | **[2M]** |
| c | List out the advantages of star topology. | | [L1][CO1] | **[2M]** |
| d | In what way you can summarize the purpose of layering. | | [L2][CO1] | **[2M]** |
| e | Can you discriminate bandwidth and latency? Justify | | [L5][CO1] | **[2M]** |
| 2 | a | [What is Data Communication network and explain its characteristics?](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/666-data-communications-and-its-characteristics.html) | | [L1][CO1] | **[4M]** |
| b | [Name the components of Data communication](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/675-components-of-data-communication.html) network.[Explain different Data flow](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/676-different-data-flow-directions.html) for Data communication networks. | | [L2][CO1] | **[6M]** |
| 3 | a | Explain the various forms in which data’s can be represented? | | [L2][CO1] | **[3M]** |
| b | Describe the working of various topologies with its advantages and disadvantages. | | [L2][CO1] | **[7M]** |
| 4 | a | [Explain different types of area of Networks.](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/679-types-of-networks.html) | | [L2][CO1] | **[5M]** |
| b | [Write about Protocol and Standards](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/674-protocol-and-standards.html). | | [L1][CO1] | **[5M]** |
| 5 | a | Discuss the principle of Protocol layering. | | [L3][CO1] | **[5M]** |
| b | Give comparison between LAN, MAN, WAN. | | [L4][CO1] | **[5M]** |
| 6 | a | What is Switching? Where switching techniques are applicable? | | [L1][CO1] | **[4M]** |
| b | Write short note on circuit switching, packet switching & message switching. | | [L2][CO1] | **[6M]** |
| 7 | a | Discuss the features of Data link layer. | | [L3][CO1] | **[3M]** |
| b | Write brief note on the error control techniques. | | [L2][CO1] | **[7M]** |
| 8 | | Draw the OSI network architecture and explain the functionalities of each layer in detail. | | [L2][CO1] | **[10M]** |
| 9 | a | Write brief note on the concept of framing. | | [L2][CO1] | **[5M]** |
| b | Explain bit stuffing and byte stuffing with an example. | | [L2][CO1] | **[5M]** |
| 10 | **a** | | What is MAC & IP address? Give comparison in between MAC & IP address. | [L1][CO1] | **[5M]** |
| **b** | | What are the responsibilities of network layer in OSI models? | [L1][CO1] | **[5M]** |
| 11 | **a** | | Explain encapsulation and decapsulation methods for OSI layers. | [L2][CO1] | **[5M]** |
| **b** | | Write brief note on the flow control techniques. | [L2][CO1] | **[5M]** |

UNIT –II

**COMPUTER NETWORKS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | | a | Define hidden node problem. | | [L1][CO2] | **[2M]** |
| b | Justify the need of Basic service set (BSS) and Extended service set(ESS) | | [L5][CO2] | **[2M]** |
| c | What is scatternet? | | [L1][CO2] | **[2M]** |
| d | Examine the access method used by wired Lan and Wireless Lan. | | [L4][CO2] | **[2M]** |
| e | List out the different standards of Wired Lan. | | [L1][CO2] | **[2M]** |
| 2 | | a | Draw the frame format of a Token and explain. | | [L3][CO2] | **[4M]** |
| b | Discuss the features & write down the classifications of wired LANs. | | [L3][CO2] | **[6M]** |
| 3 | | a | [Define](http://www.myreadingroom.co.in/notes-and-studymaterial/68-dcn/2965-random-access-protocols-in-dcn.html) Ethernet in wired LANs. Write down the name of different generations of Ethernet. | | [L1][CO2] | **[5M]** |
| b | Sketch a diagram of Ethernet frame & explain all the parts. | | [L2][CO2] | **[5M]** |
| 4 | | a | Explain addressing method for Ethernet. | | [L2][CO2] | **[4M]** |
| b | Define the type of the following destination addresses.   1. 4A:30:10:21:10:1A 2. 47:20:1B:2E:08:EE  c. FF:FF:FF:FF:FF:FF | | [L5][CO2] | **[6M]** |
| 5 | | a | Illustrate the working of CSMA/CD protocol with necessary diagrams. | | [L4][CO2] | **[6M]** |
| b | Discuss about the working of Token Ring. | | [L3][CO2] | **[4M]** |
| 6 | | a | Illustrate the working of CSMA/CA protocol with necessary diagrams. | | [L3][CO2] | **[6M]** |
| b | What are the advantages of using a virtual LAN? | | [L1][CO2] | **[4M]** |
| 7 | | a | Describe Token passing in controlled access. | | [L3][CO2] | **[5M]** |
| b | What is FDDI? Compare FDDI with Token passing. | | [L1][CO2] | **[5M]** |
| 8 | a | | Discuss about the working and performance of Token Bus protocol. | | [L2][CO2] | **[5M]** |
| b | | Draw the frame format for Token Bus and explain. | | [L2][CO2] | **[5M]** |
| 9 | | a | Write about the architecture of a Bluetooth network. | | [L1][CO2] | **[5M]** |
| b | Analyze the different layers in a Bluetooth network. | | [L4][CO2] | **[5M]** |
| 10 | |  | | Explain the services of WiMAX. | [L2][CO2] | **[5M]** |
|  | | Draw a WiMAX frame & define all the parts. | [L2][CO2] | **[5M]** |
| 11 | |  | | Write short notes on   1. Cellular telephony   b) Satellite Networks | [L1][CO2]  [L1][CO2] | **[5M]**  **[5M]** |

UNIT –III

**TCP/IP**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | a | How would you design Class A, Class B and Class C of IP. | | [L1][CO2] | **[2M]** |
| b | Demonstrate the need for subnetting. | | [L2][CO2] | **[2M]** |
| c | Expand ICMP and write the function | | [L2][CO2] | **[2M]** |
| d | Determine the mechanisms used for transition for IPv6 to IPv4 address. | | [L5][CO2] | **[2M]** |
| e | Choose the class of the following IP address: a) 110.34.56.45  b) 212.208.63.23 | | [L6][CO2] | **[2M]** |
| 2 | a | Define TCP/IP layering. | | [L1][CO1] | **[5M]** |
| b | Explain how it is differing from OSI model? | | [L3][CO1] | **[5M]** |
| 3 | a | Describe logical & physical addressing for TCP/IP model. | | [L2][CO1] | **[4M]** |
| b | Write a short note on address mapping. | | [L2][CO1] | **[6M]** |
| 4 | | Explain IP Datagram format with proper diagram. | | [L2][CO1] | **[10M]** |
| 5 | a | What is subnet addressing & subnet mask? | | [L1][CO2] | **[4M]** |
| b | Draw the frame format of IPv4 and explain each field of it | | [L3][CO2] | **[6M]** |
| 6 | a | Define the dotted decimal notation in IP with example. | | [L1][CO2] | **[4M]** |
| b | Describe in detail the working of ICMP protocol. | | [L2][CO2] | **[6M]** |
| 7 | a | Write the classifications of IPv4 address & define them. | | [L2][CO2] | **[6M]** |
| b | Compare classful addressing and classless addressing. | | [L4][CO2] | **[4M]** |
| 8 | a | Write the addressing of IPv6. | | [L1][CO2] | **[4M]** |
| b | Draw a packet format for IPv6 protocol & define all the terms. | | [L2][CO2] | **[6M]** |
| 9 | **a** | Give a comparison for IPv4 & IPv6 Protocol. | | [L4][CO2] | **[5M]** |
| **b** | An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets: one subblock of 10 addresses, one sub block of 60 addresses, and one subblock of 120 addresses. Design the subblocks. | | [L4][CO2] | **[5M]** |
| 10 | **a** | | Describe in detail the working of ARP protocol. | [L2][CO2] | **[5M]** |
| **b** | | Describe in detail the working of RARP protocol. | [L2][CO2] | **[5M]** |
| 11 | **a** | | Discuss the features of TCP. | [L2][CO2] | **[5M]** |
| **b** | | Explain the segment format for TCP. | [L2][CO2] | **[5M]** |

UNIT –IV

# COMMUNICATION PROTOCOLS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | a | What is the purpose of Domain Name System? | | [L1][CO2] | **[2M]** |
| b | What is the difference between a user agent (UA) and a mail transfer agent? | | [L1][CO2] | **[2M]** |
| c | Why is an application such as POP needed for electronic messaging? | | [L4][CO2] | **[2M]** |
| d | Differentiate IMAP and POP. | | [L1][CO2] | **[2M]** |
| e | How would you discover MIME types and subtypes? | | [L1][CO2] | **[2M]** |
| 2 | a | Explain DNS with reference to its components and working. | | [L2][CO2] | **[5M]** |
| b | Explain the message transfer using simple mail transfer protocol. | | [L2][CO2] | **[5M]** |
| 3 | a | Explain the final delivery of email to the end user using pop3. | | [L2][CO2] | **[5M]** |
| b | Write short notes on email services of the application layer. | | [L1][CO2] | **[5M]** |
| 4 | | Explain the architecture and services of e-mailing system. | | [L2][CO2] | **[10M]** |
| 5 | a | With a relevant example, discuss how the domain space is divided. | | [L2][CO2] | **[5M]** |
| b | Distinguish between a fully qualified domain name and a partially qualified domain name. Give relevant example | | [L3][CO2] | **[5M]** |
| 6 | a | Discuss how simple mail transfer protocol (SMTP) works? Can multimedia messages be transmitted using SMTP? Discuss. | | [L2][CO2] | **[10M]** |
| 7 | a | Write short notes on FTP. | | [L2][CO2] | **[5M]** |
| b | Examine how SMTP transfers message from one host to another with suitable illustration. | | [L4][CO2] | **[5M]** |
| 8 | a | Assess IMAP with its state transition diagram. | | [L3][CO2] | **[5M]** |
| b | Infer the functions performed by DNS. Give example. | | [L3][CO2] | **[5M]** |
| 9 | **a** | Discuss the working of frame relay. | | [L2][CO5] | **[5M]** |
| **b** | Describe the architecture of ATM. | | [L2][CO5] | **[5M]** |
| 10 | **a** | | Describe the characteristics of ATM. . | [L2][CO5] | **[5M]** |
| **b** | | Explain about ports and sockets in communication protocol. | [L2][CO5] | **[5M]** |
| 11 | | | Briefly describe the issues involved in using ATM technology in LANS. | [L3][CO5] | **[10M]** |

UNIT –V

# INTERNET DEVICES AND PROTOCOLS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | a | How the internet can be accessed by using cable? | [L1][CO5] | **[2M]** |
| b | What is Network Security? | [L1][CO6] | **[2M]** |
| c | Write the applications of Modem? | [L1][CO5] | **[2M]** |
| d | Explain the types of Bridges? | [L1][CO5] | **[2M]** |
| e | Explain the need of using internet devices and Protocols? | [L1][CO5] | **[2M]** |
| 2 | | Explain the typical dial-up connection between a home user and an ISP. | [L2][CO5] | **[10M]** |
| 3 | a | What are SLIP and PPP? | [L1][CO5] | **[5M]** |
| b | Compare SLIP and PPP. | [L4][CO5] | **[5M]** |
| 4 | a | What is a leased line? What purpose does it serve? | [L1][CO5] | **[5M]** |
| b | Explain the need and the concept of internetworking. | [L2][CO5] | **[5M]** |
| 5 | | Write short notes on 1. Connecting devices  2. Routers | [L1][CO5]  [L1][CO5] | **[5M]**  **[5M]** |
| 6 | a | Explain briefly about the working of Modem. | [L1][CO5] | **[5M]** |
|  | b | Discuss the applications of modem. | [L2][CO5] | **[5M]** |
| 7 | a | Discuss about the basic threats in network security. | [L1][CO6] | **[5M]** |
| b | Explain in detail about the firewall. | [L5][CO6] | **[5M]** |
| 8 | a | Compare bridges gateways and switches. | [L2][CO5] | **[5M]** |
| b | Describe the requirements of DSL. | [L5][CO5] | **[5M]** |
| 9 | **a** | Discuss in detail 1. Bridges  2. Gateways | [L2][CO5] [L2][CO5] | **[5M]**  **[5M]** |
| 10 | **a** | Discuss the two DSL standards. | [L5][CO5] | **[5M]** |
| **b** | Discuss the types and basics of MODEM. | [L2][CO5] | **[5M]** |
| 11 | | Explain the different ways of accessing the internet? | [L1][CO5] | **[10M]** |

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