

COMPUTER NETWORK QUESTION BANK 2021-22

BTETC602 Computer Network & Cloud Computing 3 Credits

Course Objectives:

- To develop an understanding of modern network architectures from a design and performance perspective.
- To introduce the student to the major concepts involved in wide-area networks (WANs), local area networks (LANs) and Wireless LANs .
- To provide an opportunity to do network programming
- To provide a WLAN measurement ideas.

Course Outcomes:

- To master the terminology and concepts of the OSI reference model and the TCP-IP reference model.
- To master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- To be familiar with wireless networking concepts.
- To be familiar with contemporary issues in networking technologies.
- To be familiar with network tools and network programming.
- For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component.
- For a given problem related TCP/IP protocol developed the network programming.
- Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.

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Syllabus :

UNIT 1- Physical Layer Data Communications, Networks, Network types, Protocol layering, OSI model, Layers in OSI model, TCP / IP protocol suite, Addressing, Guided and Unguided Transmission media. Switching: Circuit switched networks, Packet Switching, Structure of a switch.

UNIT 2- Data Link Layer Introduction to Data Link Layer, DLC Services, DLL protocols, HDLC, PPP, Media Access Control: Random Access, Controlled Access, Channelization.

UNIT 3- Wired LAN: Ethernet Protocol, Standard Ethernet, Fast Ethernet, Gigabit Ethernet, 10 Gigabit Ethernet. Wireless LANS & Virtual Circuit Networks Introduction, Wireless LANS: IEEE 802.11 project, Bluetooth, Zigbee, Connecting devices and Virtual LANS: Connecting devices, Virtual LANS.

UNIT 4- Network Layer Switching, Logical addressing – IPV4, IPV6; Address mapping – ARP, RARP, BOOTP and DHCP–Delivery, Forwarding and Unicast Routing protocols.

UNIT 5- Transport Layer Process to Process Communication, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), SCTP Congestion Control; Quality of Service, QoS improving techniques: Leaky Bucket and Token Bucket algorithm.

UNIT 6- Application Layer Domain Name Space (DNS), DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts of Cryptography

**Reference Book : Data Communication and Networking, 4th Edition,
Behrouz A. Forouzan, McGraw-Hill.**

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ASSISTANT PROFESSOR (Ad-hoc)

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Unit-1

1-2 -Marks Questions:

1. Define Computer Network?
2. Define Internet?
3. What do mean by network topology?
4. What is a network? And what are the benefits of the networks?
5. What do mean by Data Communication?
6. What are the fundamental characteristics for effective data communication?
7. What is the difference between MAC address and IP address ?

5 -7 Marks Questions:

1. Explain the types of transmission modes.
2. Explain the different types of addressing used in computer network.
3. What is network topology? Explain the different network topologies.
4. What are the different types of networks? Explain in detail.
5. Explain the OSI reference model with neat diagram.
6. Explain the TCP/IP reference model with neat diagram
7. Explain different types of switching techniques.
8. Explain the various transmission media in detail.

Unit-2

1-2 Marks Questions:

1. Define Framing?
2. What is ARQ?
3. What is noiseless channel?
4. What are different services provide by data link layer ?
5. What is Error? Explain types of error.
6. Compare the HDLC and PPP. `

5 -7 Marks Questions:

1. Explain in brief about different framing methods.
2. Compare the different sliding window protocols
3. Explain HDLC protocol in detail
4. Explain Point to Point protocol in detail.
5. Explain the various protocols for noisy channel.

Unit-3

1-2 Marks Questions:

Q.1 Define the following terms -

- a) Hub
- b) Switch
- c) Router
- d) Bridge
- e) Gateway
- f) Repeater
- g) Ethernet
- h) Bluetooth
- i) Virtual LAN

Q.2 Compare the following networking devices -

- a) Hub and Switch
- b) Router and Bridge
- c) Router and Switch
- d) Hub and Bridge

5 -7 Marks Questions:

Q.1 Explain the following networking devices in detail

- a) Switch
- b) Router
- c) Bridge
- d) Gateway
- e) Repeater
- f) Hub

Q.2 Write a note on

- a) Standard Ethernet
- b) Fast Ethernet
- c) Gigabit Ethernet
- d) 10-Gigabit Ethernet
- e) IEEE 802.11 Standards
- f) Virtual LANs

Unit-4

Questions:

1. What are the responsibilities of Network Layer?
2. Write Short Note on
 - a) IPV4 Addressing
 - b) IPV6 Addressing
 - c) Routing Table
3. What are the types of class full addressing? And Function of each class address
4. Define : Netid and Hostid
5. Define : Subnetting and Supernetting
6. What is Default masks for class A, B, C addressing
7. What is need for Classless addressing
8. What is the need for IPV6 Addressing
9. Discuss the Address Resolution Protocol.
10. Discuss the Reverse Address Resolution Protocol.
11. Change the following IPv4 addresses from binary notation to dotted-decimal notation.
 - a. 10000001 00001011 00001011 11101111
 - b. 11000001 10000011 00011011 11111111
12. Change the following IPv4 addresses from dotted-decimal notation to binary notation.
 - a. 111.56.45.78
 - b. 221.34.7.82
13. Find the error, if any, in the following IPv4 addresses.
 - a) 111.56.045.78
 - b) 221.34.7.8.20
 - c) 75.45.301.14
 - d) 11100010.23.14.67
14. Find the class of the following IP addresses.
 - a) 208.34.54.12
 - b) 238.34.2.1
 - c) 114.34.2.8
 - d) 129.14.6.8
15. Find the netid and the hostid of the following IP addresses.
 - a. 114.34.2.8
 - b. 132.56.8.6
 - c. 208.34.54.12

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16. A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/28.
- What is the first address in the block?
 - Find the last address for the block
 - Find the number of addresses
17. Find the sub network address and the host-ID for the following
- IP Address – 120.14.22.16 & Mask- 255.255.128.0
 - IP Address – 140.11.36.22 & Mask- 255.255.255.0
 - IP Address – 141.181.14.16 & Mask- 255.255.224.0
 - IP Address – 200.34.22.156 & Mask- 255.255.255.240
18. In a block of addresses, we know the IP address of one host is 25.34.12.56/16. What are the first address (network address) and the last address (limited broadcast address) in this block?
19. In a block of addresses, we know the IP address of one host is 182.44.82.16/26. What are the first address (network address) and the last address in this block?
20. An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows:
- The first group has 64 customers; each needs 256 addresses.
 - The second group has 128 customers; each needs 128 addresses.
 - The third group has 128 customers; each needs 64 addresses.
- Design the sub-blocks and find out how many addresses are still available after these allocations.
21. An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows.
- The first group has 200 medium-size businesses; each needs 128 addresses.
 - The second group has 400 small businesses; each needs 16 addresses.
 - The third group has 2000 households; each needs 4 addresses.
- Design the sub-blocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.

Unit-5

Questions:

- What are the responsibilities of Transport Layer?
- Compare the TCP AND UDP
- The UDP header in hexadecimal format is as : BC82000D002B001D Obtain the following from it:
 - Source port number
 - Destination port number
 - Total length
 - Length of the data.
 - Name of client process.

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4. The UDP header in hexadecimal format is as : CB84000D001C001C Obtain the following from it:
 1. Source port number
 2. Destination port number
 3. Total length
 4. Length of the data.
 5. Name of client process

5. The UDP header in hexadecimal format is as : 0045000D0058FE20 Obtain the following from it:
 1. Source port number
 2. Destination port number
 3. Total length
 4. Length of the data.
 5. Name of client process

6. The UDP header in hexadecimal format is as : 0632000D001CE217 Obtain the following from it:
 1. Source port number
 2. Destination port number
 3. Total length
 4. Length of the data.
 5. Name of client process

7. Write short notes on
 - a. TCP
 - b. UDP

Unit-6

Write Short Note on following:

- a. Domain Name Space (DNS)
- b. DDNS
- c. TELNET
- d. EMAIL
- e. File Transfer Protocol (FTP),
- f. WWW
- g. HTTP
- h. Firewalls