Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 70443

B.E./ B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth/ Sixth Semester

Computer Science and Engineering

CS 8591 – COMPUTER NETWORKS

(Common to: Computer and Communication Engineering/ Information Technology)

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention the different types Network.

2. Define Packet Switching.

3. Define Data-Link Layer Protocols.

4. What is HDLC?

5. What are unicast routing protocols?

6. What are State Routing protocols?

7. Write the significant of port number in TCP connection.

8. Write the difference between TCP and UDP.

9. What is FTP? Write the application of FTP.

10. List the application layer protocols used for email communication.

PART B — (5 × 13 = 65 marks)

11. (a) Demonstrate the importance and the basic functions that are performed by the Physical Layer of the OSI Model.

Or

(b) Illustrate the four important and essential types of Physical Topology or Network Topology that helps to perform the device linking geographical.

12.   (a)   Illustrate the different tasks functions performed by the Data-link Layer on behalf of the OSI Model upper Layer.

Or

(b)   Demonstrate the Logical Link Control Sub-Layer and Media Access Control Sub-Layer functionalities of Data-Link Layer.

13.   (a)   Illustrate the differences and benefits between IPV4 and IPV6 protocols.

Or

(b)   Illustrate the working principles of the IPV4 addressing and also explain IPV6 address shorthand with an example.

14.   (a)   Illustrate the data transmission mechanism of UDP and TCP protocols.

Or

(b)   Illustrate the name of the Well-Known Port used by TCP, and the Services provided by the TCP/ UDP protocols.

15.   (a)   Describe the functionality of the DNS, HTTP and FTP.

Or

(b)   Explain Port numbers and the functions of the TELNET, TFTP, NFS, SMTP, and SNMP.

PART C — (1 × 15 = 15 marks)

16.   (a)   Illustrate the Computer Network ISO-OSI Network Architecture with a schematic block diagram that reveals the communications between the sender and receiver.

Or

(b)   Describe in detail the design issues related to services provided, frame synchronization, flow control, Error Control with Data Link Layer.

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Question Paper Code : 20875

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fourth/Fifth Semester

Computer Science and Engineering

CS 3591 – COMPUTER NETWORKS

(Common to : Computer Science and Engineering (Cyber Security) / Computer and Communication Engineering / Artificial Intelligence and Data Science and Information Technology)

(Regulations 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the basic tasks of a communications system?

2. What is the meaning of stateful and stateful of a protocol? Give an example for each one.

3. An IP datagram is carrying a TCP segment destined for address 130.14.16.17. The destination port address is corrupted and it arrives at destination 130.14.16.19. How does the receiving TCP react to this error?

4. We need three types of addresses, i.e. each computer has 3 addresses IP, MAC and port number while working with the internet. Why?

5. Consider a subnet with prefix 128.119.40.128/28. Give the "range" of IP addresses that can be assigned to this network.

6. What type of switching is used in present digital communications?

7. A home user upgrades from a dial-up connection to high-speed broadband, but does not see much improvement in Internet performance for visiting a Web site. Give one reason why this might happen, even if the network and the Web server have ample capacity.

8. What are the important attributes for a good routing algorithm?

9. List the responsibilities of Data Link Layer.

10. What is an Virtual Lan?

PART B — (5 × 13 = 65 marks)

11. (a) Explain in detail how data is transmitted as data units from source to destination in a layered approach using the TCP/IP protocol Suite.

Or

(b) Briefly explain the necessary protocols for a message to transfer from aaa@xxx.com to bbb@yyy.com.

12. (a) Give an overview of Flow control and Congestion control TCP.

Or

(b) Explain in detail congestion avoidance techniques in TCP.

13. (a) Suppose an ISP owns the block of addresses of the form 128.119.40.96/26. Suppose it wants to create four subnets from this block, with each block having the same number of IP addresses. What are the prefixes (of form a.b.c.d/x) for the four subnets? Draw the network diagram for the same.

Or

(b) Briefly explain the ARP in detail. A host with IP address 130.23.43.20 and physical address B2:34:55:10:22:10 has a packet to send to another host with IP address 130.23.43.25 and physical address A4:6E:F4:59:83:AB (which is unknown to the fist host). The two hosts are on the same Ethernet network. Show the ARP request and reply packets that are encapsulated in Ethernet frames.

14. (a) Consider the network shown below. Show the operation of Dijkstra's (Link State) algorithm for computing the least cost path from router F to all destinations. Explain the process.
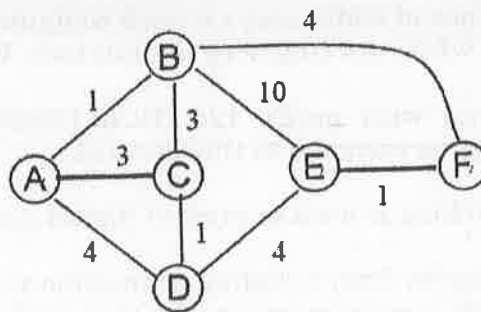
Or

(b) Consider two routers exchanging information via BGP protocol. Explain BGP Sessions and packet formats in detail between two routers.

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15. (a) Elaborate on the CSMA protocols. What is the main downfall of the Carrier Sense Multiple Access (CSMA) method? How does Collision Detection (CD) methods will help to alleviate this problem?

Or

(b) Discuss in detail about wireless LAN (802.11).

PART C — (1 × 15 = 15 marks)

16. (a) (i) Briefly explain the error control techniques in data link layer. (8)

(ii) Consider the cyclic redundancy check (CRC) based error detecting scheme having the generator polynomial $X^3 + X + 1$. Suppose the message 11000 is to be transmitted. Find the codeword. Show your evalution work for the same. (7)

Or

(b) Suppose you open a startup company "foo" and want to set up your company network your network has the following servers:

•   DNS server "dns1.foo com" with IP as "140.112.30.40"

•   Web server: "foo.com" with two IP as "140.112.30.55" and "140.112.30.56".

    The web server also has a name as www.foo.com

•   Email server: "galaxy.foo.com" with IP as "140.112.30.60"

•   Your company's email address is "username@foo.com"

(i) Briefly explain in detail about the working of DNS. (8)

(ii) What resource records (RRs) do you need to provide to the upper-level ".com" Registrar? (3)

(iii) What RRs do you need to put in your company's DNS server? (4)

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Question Paper Code : 80447

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fifth/Sixth Semester

Computer Science and Engineering

CS 8591 – COMPUTER NETWORKS

(Common to: Computer and Communication Engineering/Information Technology)

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List out various wired transmission medium used in computer networks.

2. What is Topology? Give its types.

3. Compared Wired LAN with Wireless LAN.

4. How Bluetooth exhibit Master Slave architecture?

5. Differentiate Unicast from Multicast.

6. Write down the significance of IPV6.

7. In Transport layer, what is the function of Port Number?

8. Provide the comparison between TCP and UDP.

9. What is the significance of DNS?

10. What is web 3.0?

PART B — (5 × 13 = 65 marks)

11. (a) (i) What is the purpose of protocol layering?   (3)

        (ii) Compare OSI model with TCP/IP model with necessary stack diagrams.   (10)

                                        Or

    (b) (i) How Switching is employed in computer networks?   (3)

        (ii) Compare circuit switching with packet switching, provide diagrams if necessary.   (10)

12. (a) (i) Data Link Layer has two sub– layers, what are there? (3)

(ii) Explain HDLC with necessary sketch. (10)

Or

(b) (i) Scheduling is a function of data link layer. How does it work? (3)

(ii) Explain CSMA/CA with necessary scenario. (10)

13. (a) Explain with suitable network topology, the working mechanism of any one Uni–cast Routing Protocol adopted in computer networks.

Or

(b) Discuss with suitable network topology, the working mechanism of any one Multi-cast Routing Protocol adopted in computer networks.

14. (a) Discuss the mechanism used in transport layer to handle congestion control.

Or

(b) Explain with necessary scenario, the working mechanism of SCTP.

15. (a) HTTP, FTP and Email are essential protocols involved in Internet Technology. Through light on them with suitable scenarios.

Or

(b) Explain the role of TELNET and WWW in application layer.

PART C — (1 × 15 = 15 marks)

16. (a) Aditya does browsing with multiple website; he wonders how could it be done. Teach him how socket programming, concept of Port number and client–server architecture aid in realizing the above scenario.

Or

(b) Internet of Things based applications is realizable with the evolution of IPV6. Explain how IPV6 addressing works on these applications.

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