

Fifth Semester B.E FASTTRACK Examination, AUGUST_SEPTMBER_2021
COMPUTER NETWORKS

Time: 3 hrs

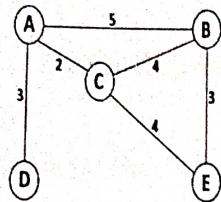
Max. Marks :100

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- 1a. Define Data Communication? What are the fundamental characteristics of data communication? [1] [1] [1] [5]
- 1b. Explain with a neat diagram the working of simplex, half duplex and full duplex [2] [1] [1] [8]
- 1c. Explain the different layered tasks involved in sending a letter with a neat diagram? [2] [1] [2] [7]
- 2a. Define Link? Explain point-to-point and multipoint connections with necessary diagrams? [1] [1] [1] [1] [5]
- 2b. Explain in brief the various categories of Network? [2] [1] [1] [1] [7]
- 2c. Explain in brief the OSI Layer with a neat diagram. [2] [1] [1] [1] [8]
- 3a. Explain in brief the following terms: i) Periodic Signal ii) Non-periodic Signal iii) Bandwidth-Delay Product iv) Propagation time v) Jitter [2] [1] [1] [5]
- 3b. Explain with a neat diagram the three phases in the actual communication in a circuit-switched network? Also explain the delay caused in the network? [2] [2] [2] [10]
- 3c. Calculate the attenuation (loss of power) where a signal travels through a transmission medium and its power is reduced to one half, i.e. $P_2 = (1/2) P_1$. [3] [2] [1] [5]
- 4a. Compare and explain the analog and digital signals with necessary diagrams? [2] [2] [1] [5]
- 4b. Compute the propagation time and the transmission time for a 2.5 Kbyte message (assume an email), if the bandwidth of the network is 1 Gbps? Assume that the distance between the sender and the receiver is 12,000 km and that light travels at 2.4×10^8 m/s [3] [2] [1] [5]
- 4c. Explain with a neat diagram the three phases in the communication of a virtual-circuit network? [2] [2] [2] [10]
- 5a. Explain in details the Burst error with suitable examples? [2] [3] [2] [3]
- 5b. Assume that, in a Stop-and-Wait ARQ system, the bandwidth of the line is 1 Mbps, and 1 bit takes 20 ms to make a round trip. What is the bandwidth-delay product? If the system data frames are 1000 bits in length, what is the utilization percentage of the link? [3] [2] [2] [10]
- 5c. Explain the Sliding window for sender and receiver window for Go-Back-N ARQ with a neat diagram? [2] [3] [2] [7]
- 6a. Calculate the CRC encoder and decoder with proper steps where the dataword is 1001 and the divisor is 1011. Also check if the Syndrome has an error and justify your answer [3] [3] [2] [12]
- 6b. Explain with a neat diagram the design of Stop-and-Wait protocol, also analyze the protocol? [3] [3] [2] [8]
- 7a. Find the error, if any, in the following IPv4 addresses. Justify your answer. [2] [4] [1] [5]

1. 111.56.045.78 ii. 221.34.7.8.20
 iii. 75.45.301.14 iv. 11100010.23.14.67

- 7b. Explain the working of Network Address Translation (NAT) with a neat diagram? [2] [4] [2] [5]
- 7c. Explain the working of Distance Vector Routing algorithm in details for the following topology, show the touting table for each node:



- 8a. Explain in structure of IPv6 address and also explain how address can be abbreviated in IPv6 with suitable example? [4] [4] [4] [10]
- 8b. Compare and write the differences between IPv4 and IPv6 packet header? [2] [4] [4] [7]
- 8c. Write a short note on Link State routing algorithm [2] [4] [4] [8]
- 9a. What is User Datagram Protocol? Explain the User datagram format with a neat diagram [2] [5] [2] [6]
- 9b. Write a short note on Domain Name Space. [2] [5] [2] [6]
- 9c. Explain in details the working of Simple Mail Transfer Protocol (SMTP) in e-mails? [2] [5] [4] [8]
- 10a. Explain with a neat diagram the Process-to-Process data delivery between two nodes? [2] [5] [1] [6]
- 10b. Explain the various scenarios used in E-mail with proper diagrams? [2] [5] [4] [10]
- 10c. Write a short note on Post Office Protocol. [2] [5] [3] [4]

Fifth Semester B.E FASTTRACK Examination, AUGUST SEPTEMBER 2021**COMPUTER NETWORKS**

Time: 3 hrs

Max. Marks :100

Instructions :1.Answer any FIVE full Questions.

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|---|----------|-----------|-----------|----------|
| 1a. Demonstrate the DESIGN OF NETWORK showing 3 important components of it. | [3] | [1] | [1] | [10] |
| 1b. Write a note on structure of the Internet having ISPs and IXPs in it. | [2] | [1] | [1] | [10] |
| 2a. Contrast on Delay and throughput in Internet. | [2] | [1] | [3] | [10] |
| 2b. Demonstrate the OSI reference model describing responsibilities of all layers. | [3] | [1] | [1] | [10] |
| 3a. Compare client server architecture with P2P architecture. | [3] | [2] | [3] | [10] |
| 3b. Contrast on DNS protocol with its commands. | [2] | [2] | [1] | [10] |
| 4a. Compare the Persistent-HTTP and non-persistent HTTP. | [3] | [2] | [1] | [10] |
| 4b. Explain the working of SMTP. | [2] | [2] | [1] | [10] |
| 5a. Explain the services given by the transport layer to other layers . | [2] | [3] | [1] | [10] |
| 5b. Demonstrate the working of UDP protocol along with its frame structure. | [3] | [3] | [1] | [10] |
| 6a. Demonstrate the working of Selective repeat protocol. | [3] | [4] | [1] | [10] |
| 6b. Explain in brief working of TCP protocol. | [2] | [4] | [1] | [10] |
| 7a. Explain how routing and forwarding happens at network layer. | [2] | [4] | [3] | [10] |
| 7b. Explain the working of router with its structure. | [2] | [4] | [1] | [10] |
| 8a. Explain the IPV4 packet format. | [2] | [4] | [1] | [10] |
| 8b. Demonstrate the working of typical virtual circuit network. | [3] | [4] | [1] | [10] |
| 9a. Compare the hierarchical address with physical address. | [3] | [4] | [1] | [10] |
| 9b. Demonstrate the CRC for error detection for the following data:
Data: 1011 and divisor: 1001 | [3] | [5] | [1] | [10] |
| 10a. Explain the working of slotted ALOHA . | [2] | [5] | [3] | [10] |
| 10b. Explain the working of CSMA . | [2] | [5] | [3] | [10] |

USN : _____

Course Code :18CS51/IS51/16IS54

Fifth Semester B.E MAKEUP Examination, MARCH_MAY_2021

COMPUTER NETWORKS

Time: 3 hrs

Max. Marks :100

Instructions :1.Answer FIVE full Questions selecting at least ONE Question from Each Unit.

MODULE 1

L CO PO M

1a. Demonstrate the network structure with a neat diagram showing 3 important components of it. [3] [1] [1] [10]

1b. What is an Internet? Show a typical Internet structure with IXPs and CDNs in it. [1] [1] [1] [10]

OR

2a. Contrast on FDM and TDM with the example of Cable network [4] [1] [3] [10]

2b. Demonstrate the practically implemented network model describing responsibilities of all layers. [3] [1] [1] [10]

MODULE 2

3a. Explain the File Transfer Protocol with a neat diagram along with the commands and return codes involved. [2] [2] [1] [10]

3b. Discuss a SMTP scenario where Alice sends a message to Bob with the help of neat diagram. Write a sample client server interaction using POP3 commands. [3] [2] [2] [10]

OR

4a. Discuss the concept of cookies with a neat client server interaction flow diagram. [2] [2] [1] [10]

4b. Differentiate between recursive and iterative queries in DNS with neat diagrams. [4] [2] [1] [10]

MODULE 3

5a. Explain the responsibilities of transport layer [2] [3] [1] [7]

5b. Compare the IP-address with port number [4] [3] [1] [5]

5c. Demonstrate the working of UDP protocol along with its frame structure [3] [3] [1] [8]

OR

6a. Demonstrate the working of Go-Back-N protocol [3] [4] [1] [10]

6b. Explain the process of flow control as achieved by TCP [2] [4] [1] [10]

MODULE 4

7a. What are the advantages of DHCP? Discuss the DHCP client server scenarios with neat diagrams. [2] [4] [1] [10]

7b. Explain the components of Router with a neat diagram. Solve to obtain the buffering required for link capacity $C=10 \text{ Gbps}$, $\text{RTT}=250\text{msec}$ and no. of flows $N=4$. [3] [4] [2] [10]

OR

8a. Differentiate between Virtual Circuit Networks and Datagram networks with neat diagrams. [4] [4] [1] [10]

8b. Discuss Ipv6 datagram format with neat diagram. [2] [4] [1] [10]

MODULE 5

9a. Differentiate between TDMA and FDMA with neat diagrams. [4] [5] [1] [10]

9b. Discuss Data Center Networking with a neat diagram. [2] [5] [1] [10]

OR

10a. Discuss the term slotted ALOHA with neat diagram. [2] [5] [1] [10]

10b. Discuss MPLS in detail with neat diagrams. [2] [5] [1] [10]

USN : _____

Course Code :16CS54

Fifth Semester B.E Semester End Examination, JANUARY_MARCH_2021

COMPUTER NETWORKS

Time: 3 hrs

Max. Marks :100

Instructions :1.Answer FIVE full Questions selecting ONE Question from Each Unit.

MODULE 1

L CO PO M

1a. Define Data Communication? What are the fundamental characteristics of data communication?

[1] [1] [1] [5]

1b. Explain with a neat diagram the working of simplex, half duplex and full duplex

[2] [1] [1] [8]

1c. Explain the different layered tasks involved in sending a letter with a neat diagram?

[2] [1] [2] [7]

OR

2a. Define Link? Explain point-to-point and multipoint connections with necessary diagrams?

[1] [1] [1] [5]

2b. Explain in brief the various categories of Network?

[2] [1] [1] [7]

2c. Explain in brief the OSI Layer with a neat diagram

[2] [1] [1] [8]

MODULE 2

3a. Explain in brief the following terms: i) Periodic Signal ii) Non-periodic Signal iii) Bandwidth-Delay Product iv) Propagation time v) Jitter

[2] [1] [1] [5]

3b. Explain with a neat diagram how data can be sent from one node to another node in a circuit-switched network?

[2] [2] [2] [10]

3c. What are the characteristics of virtual-circuit network?

[2] [2] [1] [5]

OR

4a. Compare and explain the analog and digital signals with necessary diagrams?

[2] [2] [1] [5]

4b. Explain the delay in circuit-switched network?

[2] [2] [1] [5]

4c. Explain with a neat diagram how source-to-destination data transfer takes place in a virtual-circuit network?

[2] [2] [1] [5]

MODULE 3

[2] [2] [2] [10]

5a. Explain in details the different types of errors with suitable examples?

[2] [3] [2] [7]

5b. What is Framing, also explain how byte stuffing and unstuffing takes places?

[2] [2] [2] [6]

5c. Explain the Sliding window for sender and receiver window for Go-Back-N ARQ?

[2] [3] [2] [7]

OR

6a. Calculate the CRC encoder and decoder with proper steps where the dataword is 1001 and the divisor is 1011. Also check if the Syndrome has an error and justify your answer [3] [3] [2] [12]

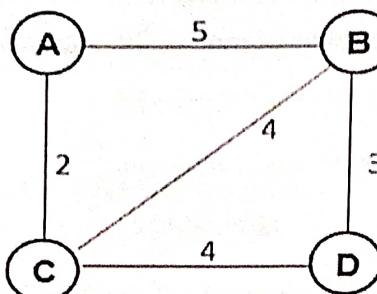
6b. Explain with a neat diagram the design of Stop-and-Wait protocol, also analyze the protocol? [3] [3] [2] [18]

MODULE 4

7a. Write a note on Classful Addressing with necessary diagrams. [2] [4] [1] [5]

7b. Explain how Network Layer can be used in internetwork to solve the problem of delivery through several links with necessary diagrams? [2] [4] [3] [7]

7c. Explain the working of Distance Vector Routing algorithm in details for the following topology, show the routing table for each node:



[3] [4] [4] [8]

OR

8a. Explain in structure of IPv6 address and also explain how address can be abbreviated in IPv6 with suitable example? [2] [4] [4] [7]

8b. Compare and write the differences between IPv4 and IPv6 packet header? [2] [4] [4] [8]

8c. What are the various fields in a dynamic routing table explain in brief. [2] [4] [4] [5]

MODULE 5

9a. What is User Datagram Protocol? Explain the User datagram format with a neat diagram

[2] [5] [2] [6]

9b. Write a short note on Domain Name Space.

[2] [5] [2] [6]

9c. Explain in details the working of Simple Mail Transfer Protocol (SMTP) in e-mails?

[2] [5] [2] [6]

OR

10a. Explain with a neat diagram the Process-to-Process data delivery between two nodes?

[2] [5] [2] [6]

10b. Explain the various scenarios used in E-mail with proper diagrams?

[2] [5] [2] [6]

10c. Write a short note on Post Office Protocol.

[2] [5] [4] [10]

[2] [5] [3] [4]

USN : _____

Course Code :18CS51/18IS51/16IS54

Fifth Semester B.E Semester End Examination, JANUARY_MARCH_2021

COMPUTER NETWORKS

Time: 3 hrs

Max. Marks :100

Instructions :1.Answer FIVE full Questions selecting at least ONE Question from Each Unit.

MODULE 1

L CO PO M

1a. Define the term protocol. Discuss the internet protocol stack with a neat diagram.

[2] [1] [1] [10]

1b. Provide a nuts and bolts description of the internet with neat diagram.

[2] [1] [1] [10]

OR

2a. Discuss digital subscriber line internet access and hybrid fiber coaxial access network with neat diagrams for each.

[2] [1] [1] [10]

2b. Explain circuit switched network with a neat diagram.

[2] [1] [1] [10]

MODULE 2

3a. Compare client server architecture with P2P architecture taking file distribution as example

[4] [2] [3] [10]

3b. Contrast on FTP protocol with its commands.

[3] [2] [1] [10]

OR

4a. Contrast the Persistent-HTTP and non-persistent HTTP.

[3] [2] [1] [10]

4b. Compare the working of SMTP and POP3 protocol

[4] [2] [1] [10]

MODULE 3

5a. Discuss TCP segment structure with neat diagram with a brief description of each field.

[2] [3] [1] [10]

5b. Discuss Go Back N protocol with neat diagram.

[2] [3] [1] [10]

OR

6a. Discuss UDP segment structure with neat diagram. What are the reasons that make many applications well suited for UDP?

[2] [3] [1] [10]

6b. Explain Selective Repeat protocol with neat diagram

[2] [3] [1] [10]

MODULE 4

7a. Differentiate routing and forwarding at network layer.

[4] [4] [3] [7]

7b. Demonstrate the Classless Inter Domain Routing taking 200.23.16.0/23 as example

[3] [4] [3] [5]

7c. Explain the working of router with its structure.

[2] [4] [1] [8]

OR

8a. Explain the IPV4 packet format.

[2] [4] [1] [10]

8b. Demonstrate the working of internet control message protocol along with commands used in it

[3] [4] [1] [10]

MODULE 5

9a. Differentiate the IP address and MAC address for any system in an LAN

[3] [5] [1] [6]

9b. Demonstrate the CRC for error detection for the following data:

Data: 1011 and divisor: 1000

[3] [5] [3] [8]

9c. Compare the single bit parity and 2D bit parity checking used in error detection

[4] [5] [1] [6]

OR

10a. Demonstrate the working of TDMA and FDMA

[3] [5] [3] [10]

10b. Contrast upon CDMA along with CSMA/CA and CSMA/CD

[3] [5] [3] [10]

KIIT SCHOOL OF TECHNOLOGY