

CBCS SCHEME

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17CS52

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- Which protocol can be used for fetching web pager? Explain its working with request and response message formats. (10 Marks)
 - Explain the services offered by DNS and also explain the DNS record and message format. (10 Marks)

OR

- Explain the working FTP along with its commands. (08 Marks)
 - Compare HTTP and SMTP. (04 Marks)
 - Illustrate how P2P architecture can be adopted in file sharing application like bit torrent. (08 Marks)

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Module-2

- Draw and explain the FSM for sender site and receiver site of rdt 2.0 protocol. (07 Marks)
 - Explain selective repeat ARQ protocol. (06 Marks)
 - Draw TCP segment structure and explain its fields. (07 Marks)

OR

- Suppose that two measured sample RTT values are 106ms and 120ms.
 - Compute Estimated RTT after each of these Sample RTT value is obtained. Assume $\alpha = 0.125$ and Estimated RTT is 100ms. Just before first of the samples obtained. (06 Marks)
 - Compute DeVRTT. Assume $\beta = 0.25$ and DeVRTT is 5ms before first of the samples obtained. (07 Marks)
 - Explain how connection establishment and termination is handled by TCP. (07 Marks)
 - What is congestion in network? Explain how TCP handles congestion. (07 Marks)

Module-3

- What is routing? With a neat diagram, explain the structure of a router. (10 Marks)
 - Write link state routing algorithm, consider the following network with the indicated link costs. Apply link state routing algorithm to compute the shortest path from 'u' to all other nodes in the network. [Refer Fig.Q5(b)]. (10 Marks)

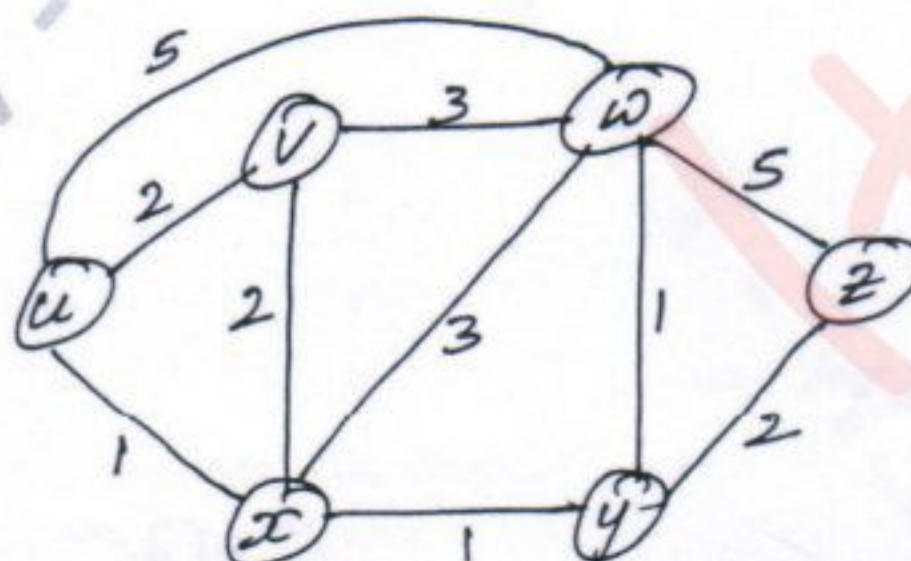


Fig.Q5(b)
1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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OR

- 6 a. Draw IPV6 datagram format. Explain its fields. (06 Marks)
 b. Illustrate the working of RIP protocol. (07 Marks)
 c. List the broadcast routing algorithm. Explain any one of them. (07 Marks)

Module-4

- 7 a. With a neat diagram, explain the components of 3G cellular network architecture. (10 Marks)
 b. Explain two different types of routing approaches to mobile nodes. (10 Marks)

OR

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- 8 a. Explain the three phases of mobile IP. (10 Marks)
 b. What is handoff? What are the steps involved in accomplishing handoff. (10 Marks)

Module-5

- 9 a. Explain three different types of streaming stored video. (10 Marks)
 b. Explain the working of CDN. (10 Marks)

OR

- 10 a. Describe the leaky bucket policing mechanism. (06 Marks)
 b. Explain the various packet scheduling mechanism. (08 Marks)
 c. Explain the properties of Video. (06 Marks)

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17CS52

Fifth Semester B.E. Degree Examination, July/August 2022 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Describe HTTP with persistent and non-persistent connections. (10 Marks)
- b. Compare client server and Peer-to-Peer architecture. (05 Marks)
- c. Explain the working of Bit Torrent for file distribution. (05 Marks)

OR

- 2 a. Describe in detail the services provided by DNS and explain the DNS message format. (10 Marks)
- b. Define a Socket. Describe the socket programming with a help of diagram for TCP. (10 Marks)

Module-2

- 3 a. With the help of FSM, describe the two states of the sender side and one state of the receiver side rdt2.0. (07 Marks)
- b. Explain selective repeat ARQ protocol. (06 Marks)
- c. Draw TCP segment structure and explain its fields. (07 Marks)

OR

- 4 a. Explain in brief, TCP congestion control mechanisms. (10 Marks)
- b. Explain the concept of transport layer multiplexing and demultiplexing. (10 Marks)

Module-3

- 5 a. What is routing? Explain the structure of a router with a neat diagram. (10 Marks)
- b. Explain Dijkstra's algorithm with example. (10 Marks)

OR

- 6 a. Explain IPV6 datagram format with neat diagram. (10 Marks)
- b. Explain the spanning tree algorithm and give its advantages and disadvantages. (10 Marks)

Module-4

- 7 a. Explain 3G system architecture. (08 Marks)
- b. Explain the two different routing approaches to mobile node. (12 Marks)

OR

- 8 a. What is hand off? What are the steps in accomplishing hand off? (10 Marks)
- b. Compare mobile IP and GSM mobility. (05 Marks)
- c. Explain Agent Discovery with diagram. (05 Marks)

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Module-5

- 9 a. List and explain the types of multimedia networking application. (10 Marks)
- b. Describe the DiffServ Internet Architecture. (05 Marks)
- c. Explain CDN operation. (05 Marks)

OR

- 10 a. Write a short notes on: (i) Netflix video streaming platform. (ii) VOIP with skype. (10 Marks)
- b. Explain briefly the QoS Guarantees Resource reservation and call admission process with neat diagram. (10 Marks)

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Fifth Semester B.E. Degree Examination, June/July 2023 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the transport services available to applications. (05 Marks)
b. Explain the HTTP message formats with an example. (10 Marks)
c. Explain the FTP commands and replies. (05 Marks)

OR

- 2 a. What are the services provided by DNS? (05 Marks)
b. Explain in detail DNS hierarchical database. (07 Marks)
c. Explain the file distribution time in P2P and client server architecture. (08 Marks)

Module-2

- 3 a. Explain Go back N protocol. (10 Marks)
b. Explain TCP segment structure. (10 Marks)

OR

- 4 a. Explain TCP connection management. (06 Marks)
b. Explain the approaches to congestion control. (04 Marks)
c. Explain the 3 phases of TCP congestion control. (10 Marks)

Module-3

- 5 a. Explain the Router architecture in detail. (10 Marks)
b. Explain IPV4 and IPV6 header. (10 Marks)

OR

- 6 a. What are the features of link state algorithm? Explain the algorithm with an example. (10 Marks)
b. What are the two approaches adopted for determining multicast tree? Explain with an example. (10 Marks)

Module-4

- 7 a. Explain in details the cellular network architecture. (05 Marks)
b. Explain on to 4G : LTE. (07 Marks)
c. Explain the agent registration in Mobile IP. (08 Marks)



OR

- 8 a. Explain in detail 3G cellular architecture. (05 Marks)
b. What are the reasons for handoff in GSM? Explain with neat diagram the handoff process in GSM. (10 Marks)
c. Explain direct routing to a Mobile user. (05 Marks)

Module-5

- 9 a. What are the different types of multimedia network applications? Explain. (08 Marks)
b. What are the different server placement philosophies? Explain. (05 Marks)
c. Explain CDN operation in detail. (07 Marks)

OR

- 10 a. Write short notes on the following: (10 Marks)
i) UDP streaming ii) DASH.
b. Explain Resource Reservation and call admission. (05 Marks)
c. Explain the three network level approaches to support multimedia applications. (05 Marks)



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17CS52

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- Explain the working of HTTP along with its required and response message format. (10 Marks)
 - Explain the P2P architecture for file sharing. (10 Marks)

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OR

- Explain the working of SMTP. Also explain mail access protocols. (10 Marks)
 - Explain the services offered by DNS along with DNS record and message format. (10 Marks)

Module-2

- Explain the working of Go – Back – N protocol. (08 Marks)
 - Draw and explain the FSM for sender site and receiver site of rdt 2.0 protocol. (08 Marks)
 - Explain UDP segment structure. (04 Marks)

OR

- Draw TCP segment structure and explain its field. (07 Marks)
 - Explain three way handshaking procedure used by TCP. (05 Marks)
 - Explain how TCP handler congestion. (08 Marks)

Module-3

- Explain IPv6 packet format. (06 Marks)
 - Explain the working of OSPF routing protocol. (07 Marks)
 - Explain any two broad cast routing algorithm. (07 Marks)

OR

- Explain the structure of a router. (10 Marks)
 - Write link state algorithm, consider the following networks with the indicated link costs. Apply link state routing algorithm to compute the shortest path from 'u' to all other nodes in the network.

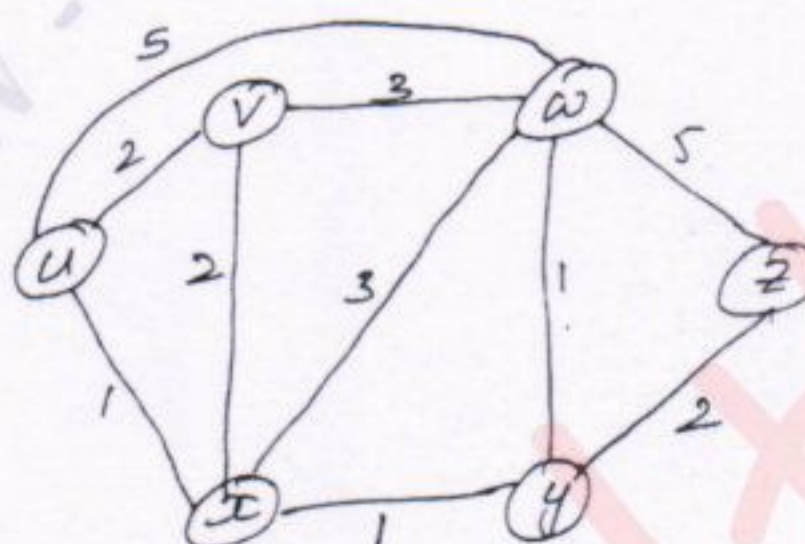


Fig.Q6(b)

(10 Marks)

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Module-4

- 7 a. Explain three phases of mobile IP. (10 Marks)
b. Illustrate the two different approaches for routing to a mobile node. (10 Marks)

OR

- 8 a. Explain 3G cellular networks architecture. (10 Marks)
b. What is handoff? Explain the steps involved in accomplishing handoff. (10 Marks)

Module-5

- 9 a. Explain the working of CDN. (10 Marks)
b. Explain three different ways of streaming stored video. (10 Marks)

OR

- 10 a. Explain the various packet scheduling mechanism. (08 Marks)
b. Explain the leaky bucket policing mechanism. (08 Marks)
c. Explain the properties of audio. (04 Marks)

CBCS SCHEME

USN

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17CS52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Many networks, including internet, provide more than one transport layer protocol. When you develop an application you need to choose one of the available transport layer protocol and consider various parameters. Explain the parameters and protocols to be considered while designing an application. (08 Marks)
- b. True or False :
- i) Processes on two different systems communicate with each other by exchanging messages across the computer networks
 - ii) A client server architecture achieves perfect security
 - iii) Socket is a hardware interface through which a process sends message into, and receives messages from the network
 - iv) No data loss is tolerated in multimedia applications such as conversational audio/video
 - v) Developing a new network application for the internet often requires one to decide whether to choose UDP or TCP. (05 Marks)
- c. With a simple sketch, explain how SMTP operate when A send mail to B where mail server of A and B are different. Show the sequence of events. (07 Marks)

OR

- 2 a. HTTPRequest message
GET/somedir/page.html HTTP/1.1
HOST : www.someschool.edu
Connection : close
User_agent : Mozilla/5.0
Accept_language : fr
Interpret the meaning of each line in few sentences. (05 Marks)
- b. Explain meaning of each line of
HTTPResponse message given below :
HTTP/1.1 200 ok
Connection : close
Date : Tue, 09 Aug 2011 15 : 44 : 04 GMT
Server : Apache/2.2.3
Last modified : Tue, 09 Aug 2011 15 : 11 : 03 GMT
Content_Length : 6821
Content_type : text/html
(data data - - - -). (07 Marks)
- c. What is the service provided by DNS system? Explain the meaning of root DNS server, Top Level Domain Servers (TLD), Authoritative DNS servers. Explain the meaning of the following DNS records
(relay1.bar.foo.com, 145.37.93.126, A)
(foo.com, mail.bar.foo.com, MX). (08 Marks)

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Module-2

- 3 a. State the assumptions in rdt 2.0 and explain the behavior of the stop-and-wait protocol. Draw the FSM of sender and receiver clearly showing the events and action. (10 Marks)
- b. Show the operation of GBN protocol with a sketch. Window size is 4 packets. Show the sequence of sending six packets (pkt0-pkt5) where pkt0 and pkt1 are correctly received and packet (pkt2) 2 is lost. (10 Marks)

OR

- 4 a. With a diagram, explain the TCP segment structure write one line about each field. (07 Marks)
- b. Explain TCP connection management with appropriate sketches (three way handshake, closing). Explain use of SYN, FIN, RST. (07 Marks)
- c. Explain the flow control service provided by TCP with a simple sketches show the buffer variation and derive the formula for rwnd. Explain how the window information at receiver side is communicated to the sender. (06 Marks)

Module-3

- 5 a. Explain router architecture with a simple sketch. How packet queueing occur at router? (08 Marks)
- b. Compare the routing protocols RIP and OSPF. (04 Marks)
- c. With a diagram, explain each field in the IPV₄ datagram. Write only few sentences about each field. (08 Marks)

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- 6 a. Suppose a router receives an IP packet containing 4020 bytes and to be forwarded to an outgoing link with MTU(Maximum Transmission Unit) of 1500 bytes. Assume the IP header is 20 bytes. Show the fragments the router creates and specify relevant values for each fragment (ID, offset and flag) and bytes in each. (08 Marks)
- b. Draw the IPV₆ datagram format. Indicate two key differences between IPV₄ and IPV₆ format. (04 Marks)
- c. Refer the following network, Find the shortest path from node 'C' to all other nodes using link state algorithm.

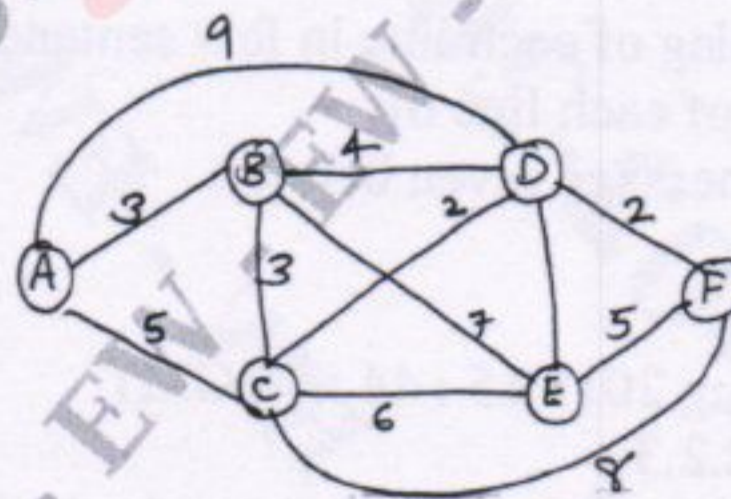


Fig.6(c)

(08 Marks)

Module-4

- 7 a. Explain the components in a cellular network. (10 Marks)
- b. Explain steps of hand off for a mobile users. (10 Marks)

OR

- 8 a. With a diagram explain two different types of routing approach to mobile node. (10 Marks)
- b. Explain agent discovery in mobile IP. Show the ICMP message and registration steps with home agent. (10 Marks)

Module-5

- 9 a. Explain the working of video streaming over HTTP. Explain perfecting, buffer etc and the roles in this process. (08 Marks)
- b. Explain how DASH helps to improve streaming over different available bandwidth. (03 Marks)
- c. Explain CDN operation with a simple sketch in a scenario a user try to get video from a site NetCinema. (09 Marks)

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OR

- 10 a. Explain how classes of service (RoS) is achieved in network with a sketch showing two users, one is doing VOIP and the other browsing. Explain packet marking using IPV₄ header. (10 Marks)
- b. Explain how leaky bucket algorithm is used to achieve traffic policing. (10 Marks)

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17CS52

Fifth Semester B.E. Degree Examination, July/August 2021
Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain the interface between the process and the computer Network socket with diagram. (10 Marks)
 b. Describe persistent and non-persistent connections of HTTP. (10 Marks)
- 2 a. Explain the services offered by DNS and also explain the DNS record and message format. (10 Marks)
 b. Define File Transfer Protocol, its connections and working. Writ about FTP commands and replies also. (10 Marks)
- 3 a. Explain connection oriented multiplexing and de-multiplexing. (08 Marks)
 b. Alice wants to communicate Bob over a TCP connection. Design a model showing different stat transition they undergo during i) Connection establishment ii) Data transfer iii) Connection termination. (08 Marks)
 c. Define rdt_send () and rdt_rcv(). (04 Marks)
- 4 a. Explain TCP segment and its services with a diagram. (10 Marks)
 b. What is congestion in a network? How TCP handles congestion. (10 Marks)
- 5 a. What is routing? Explain the structure of router with a neat diagram. (10 Marks)
 b. Explain the spanning tree algorithm and give its advantages and disadvantages. (10 Marks)
- 6 a. Discuss the IPV6 packet format. (08 Marks)
 b. Describe Network layer services briefly. (06 Marks)
 c. How does router determine the replacement VC number for a packet traversing the router? (06 Marks)
- 7 a. Define 5 elements of mobile network architecture. (10 Marks)
 b. Explain Indirect and Direct Routing to Mobile node. (10 Marks)
- 8 a. What is hand off? What are the steps in accomplishing hand off? (10 Marks)
 b. Compare mobile IP and GSM mobility. (05 Marks)
 c. Explain Agent Discovery with diagram. (05 Marks)
- 9 a. Explain PCM Encoder and PCM Decoder. (07 Marks)
 b. Briefly explain properties of Video and Audio. (07 Marks)
 c. Describe the DiffServ Internet Architecture. (06 Marks)
- 10 a. Illustrate the interaction between Client and Server for HTTP streaming for Audio and Video. (08 Marks)
 b. Explain content Distribution Network. (08 Marks)
 c. Mention limitations of Best – Effort IP service. (04 Marks)



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17CS52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With general format, explain the HTTP request and response messages. (10 Marks)
- b. With neat diagram, illustrate the basic operation of SMTP. (10 Marks)

OR

- 2 a. Explain recursive queries in DNS with neat diagram. (10 Marks)
- b. With neat diagram, explain DNS message format. (10 Marks)

Module-2

- 3 a. With general format, explain the various fields of UDP segment. Explain how checksum is calculated. (10 Marks)
- b. With neat diagram, explain the working of rdt 2.0. (10 Marks)

OR

- 4 a. With general format, explain all the field in TCP segments. (10 Marks)
- b. Explain TCP connection management process with neat diagram. (10 Marks)

Module-3

- 5 a. With a neat diagram, explain the structure of a router. (10 Marks)
- b. Write the link state algorithm and apply it to the following graph to compute shortest path from source node 'A' to all other nodes in the network. [Refer Fig.Q5(b)]

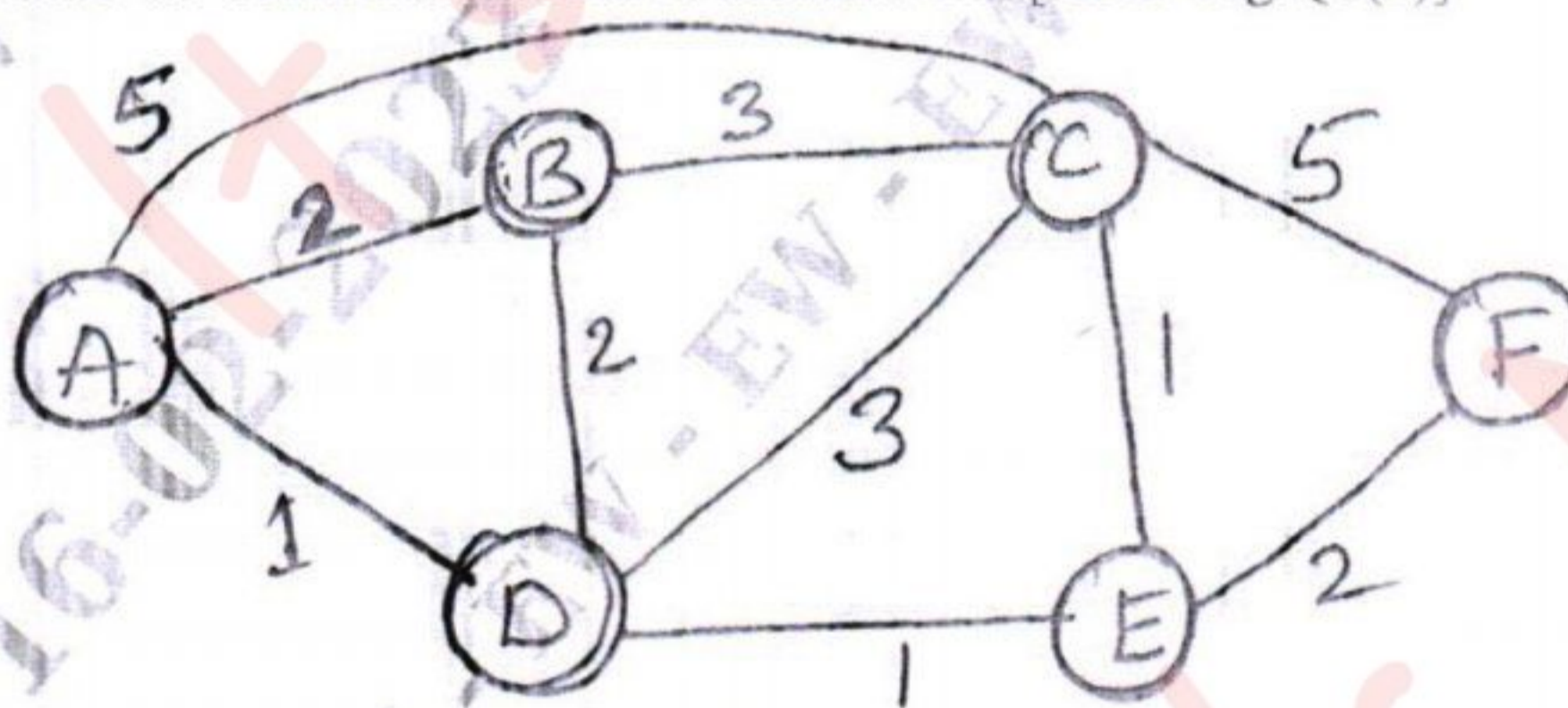


Fig.Q5(b)

(10 Marks)

OR

- 6 a. With general format, explain the various fields of IPV6. (10 Marks)
- b. Explain the intra-AS routing protocol in detail. (10 Marks)

Module-4

- 7 a. Explain the 3G cellular network architecture with neat diagram. (10 Marks)
- b. Explain the two types of routing approaches to mobile node. (10 Marks)

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OR

- 8 a. Explain the three phases of mobile IP. (10 Marks)
b. What is hand off? What are the steps involved in accomplishing handoff? (10 Marks)

Module-5

- 9 a. Explain the three different types of streaming stored video. (10 Marks)
b. Discuss the properties of audio and video. (10 Marks)

OR

- 10 a. Explain the working of CDN. (10 Marks)
b. What are the classifications in multimedia network applications? Explain. (10 Marks)
