CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

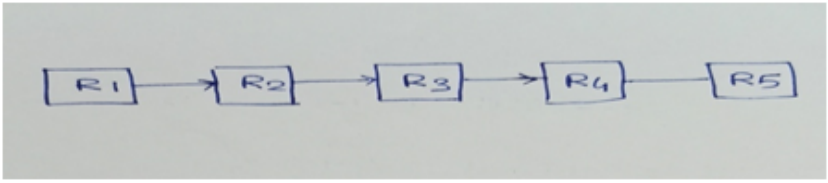
Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

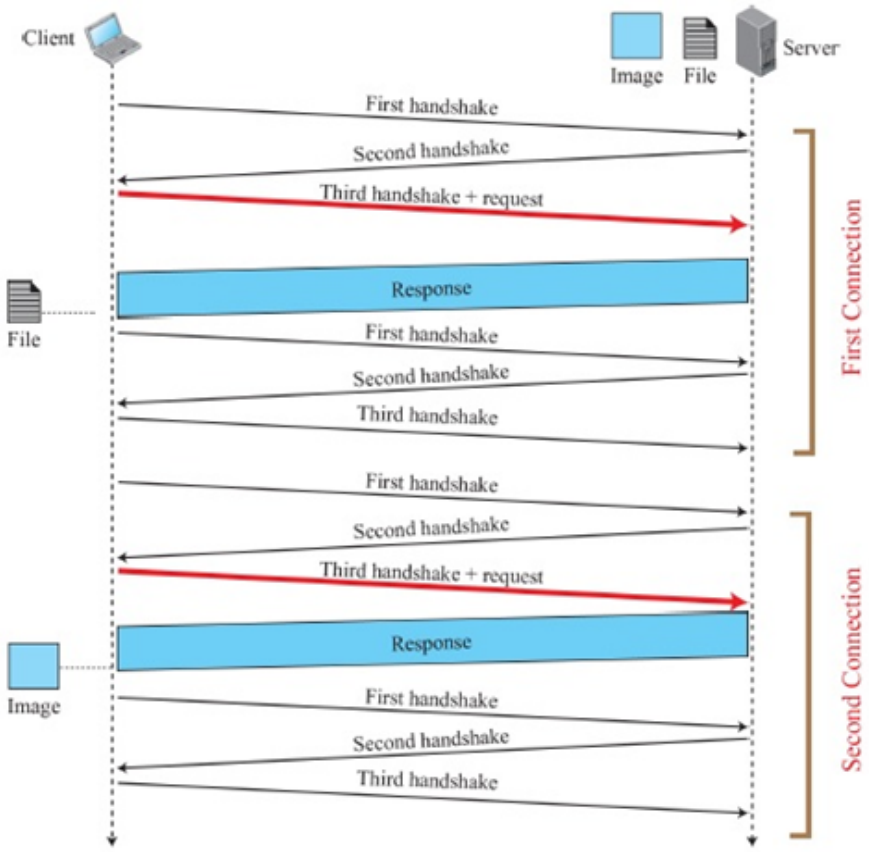
Unit-1

Q No 1 a) (11)



A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

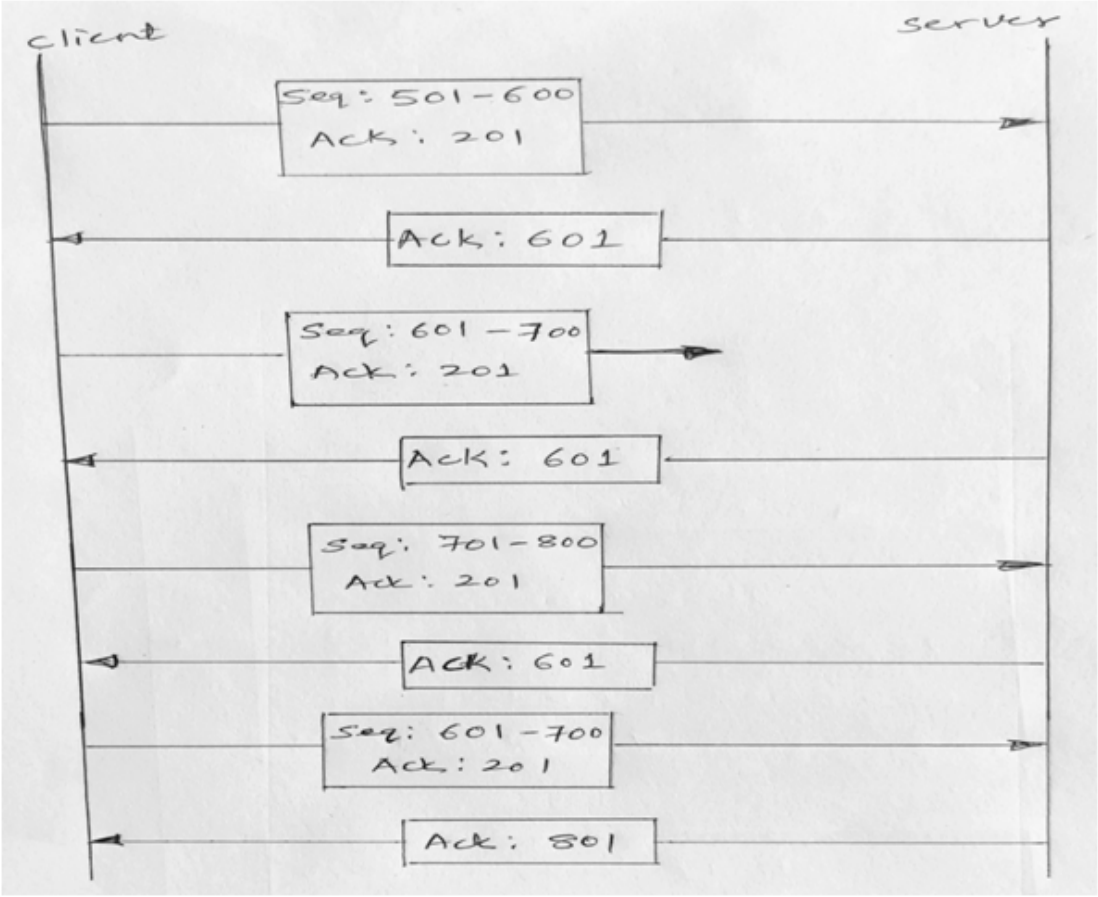
B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)



C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.

a) Is this merging possible?

b) Discuss the prerequisite for this merging to happen.

c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography.(3) (12)

ii) Ajay received following cipher text from Vijay. After decryption what is the original message conveyed by Vijay to Ajay? (3)

JIKSA MIBLZ QDNZA IZMIV

B) i) Identify various fields in International mobile station equipment identity?(3)

ii) Identify and Name various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

262 017 000 000 012 (3)

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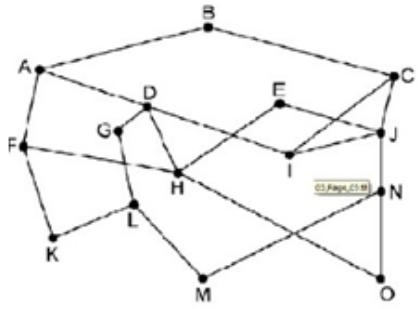
Unit-1

Q No 1 a) A) Consider the below given network, (11)



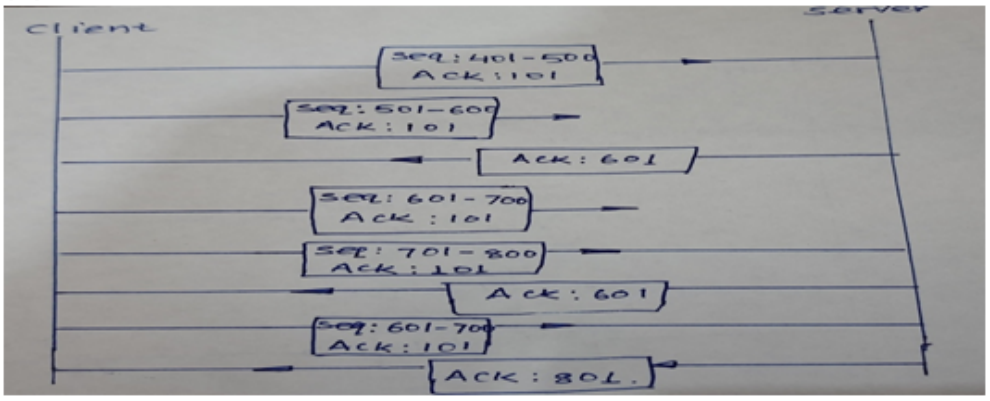
If a node wants to send a packet to all other nodes, suggest a technique used for this purpose. Justify your answer. How can any node avoid sending duplicate packet to the any other node?(4)

B) There are two ports/Connections for FTP, one for data and other for control. What would happen if there was only one port used for both data and control? (3)

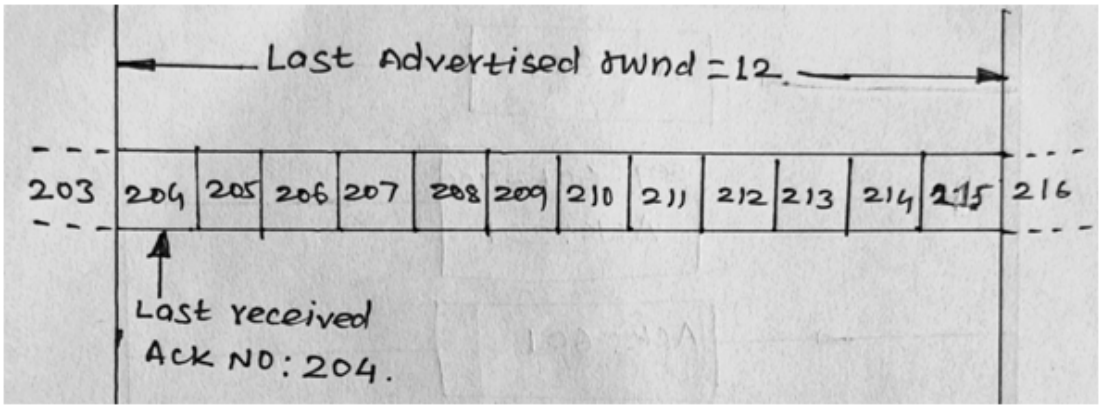
C) Some Computer systems would like to communicate with each other as per their requirement may be in group or individually. Select the best solution between client server and peer to peer communication. How did you arrive at this solution? (4)

Unit-2

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Q No 3 a) A) There is need for an organization to design a network for 200 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 16000 number of computer systems in an organization. There are 16 departments and per department there can be minimum 1000 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman

AJRW KARWP QJIIRWNBB

What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

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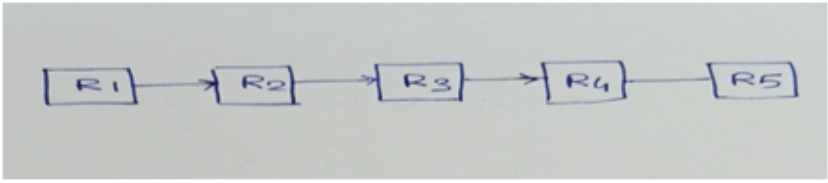
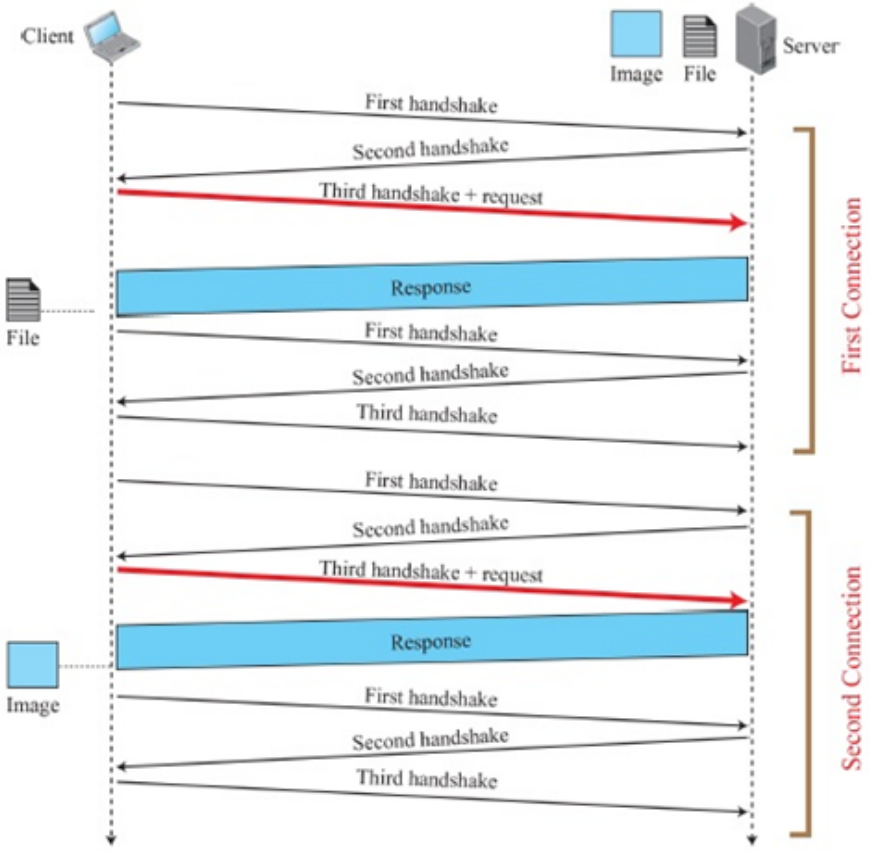
Unit-1

Q No 1 a) (11)



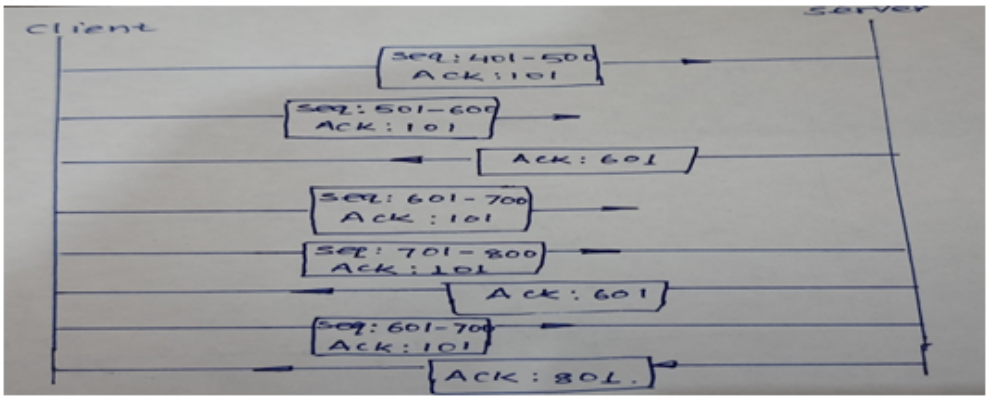
A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)

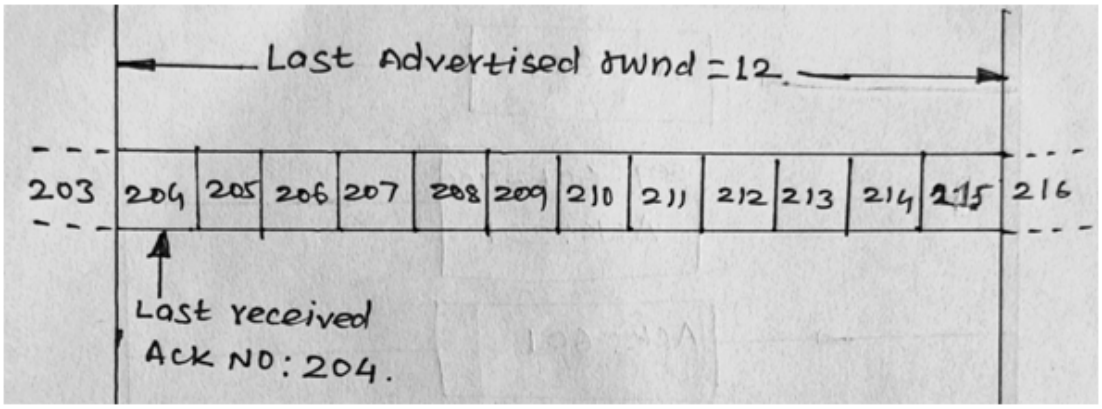


C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other. This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A) i)Cryptography is used to support Data Integrity? True or false. Justify your answer(3) (12)

ii)Ram got the following secrete English message from Shyam.

Wfns xuwjfix mfuunsjxx.

What will be the Original Message after Deciphering. (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Dinesh wants to secretly share a message to Sushant.
2. Deepak wants to send an important file over the Internet to Ravi. Ravi should get the same file Intact
3. Nisha has become a friend of Reva over Facebook. Reva shows interest to purchase product from Nisha and also done a partial payment. Nisha has to fulfil the order completely. Now, Reva is denying that she has not placed any such order.

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

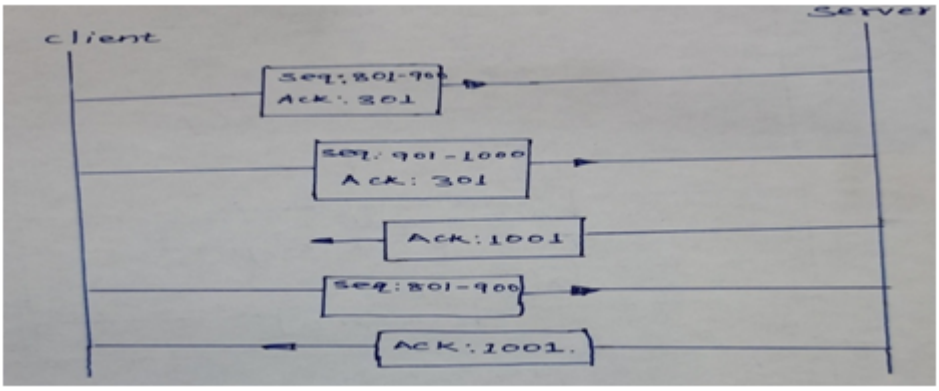
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) A file of size 8000 bytes needs to be sent using TCP. The first byte is numbered as 3001 and it is assume to be initial sequence number. Each segment carries 2000 bytes. How many segments are created by TCP? Find out the sequence number of each segment. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) My dreams company has decided to deploy 802.11 network for its employees. The aim is to provide concurrent internet connectivity to all employees. Will CSMA/CD algorithm used in this scenario? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.
a) Is this merging possible?
b) Discuss the prerequisite for this merging to happen.
c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography.(3) (12)

ii) Ajay received following cipher text from Vijay. After decryption what is the original message conveyed by Vijay to Ajay? (3)

JIKSA MIBLZ QDNZA IZMIV

B) i) Identify various fields in International mobile station equipment identity?(3)

ii) Identify and Name various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

262 017 000 000 012 (3)

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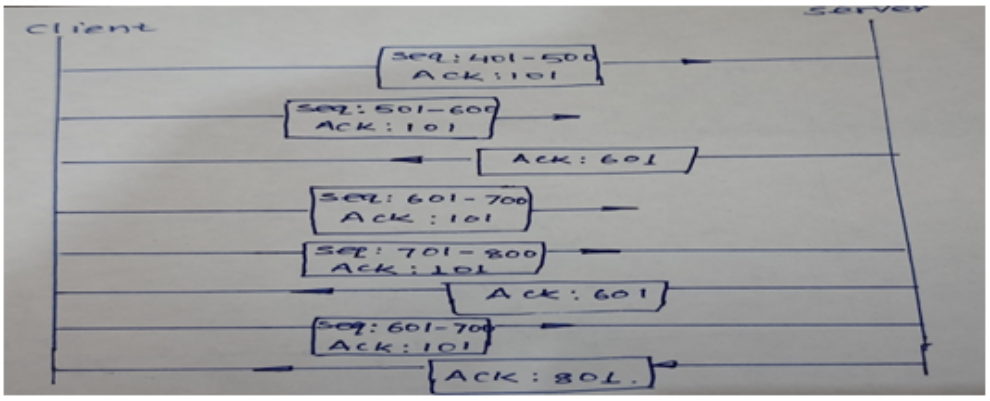
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

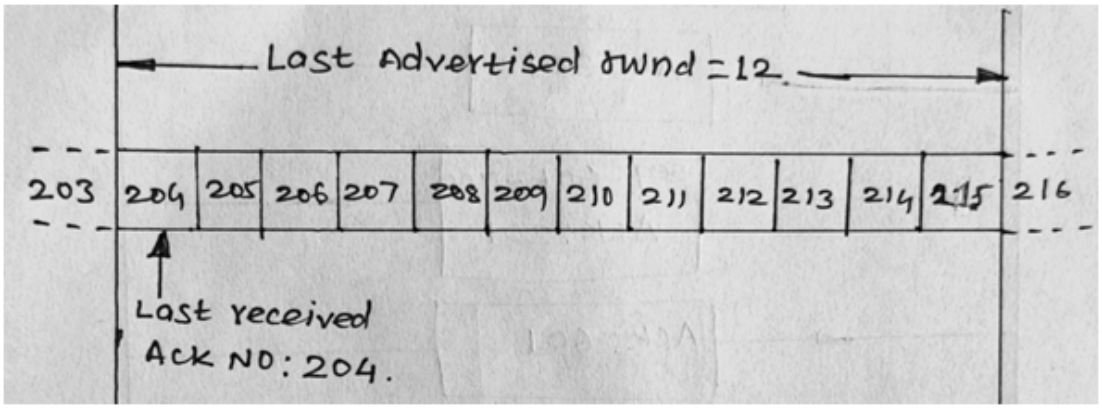
C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other. This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -
208 092 000 000 117 (3)

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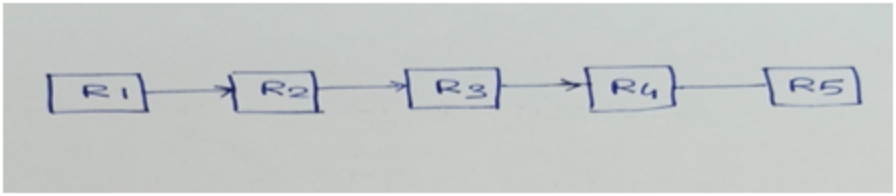
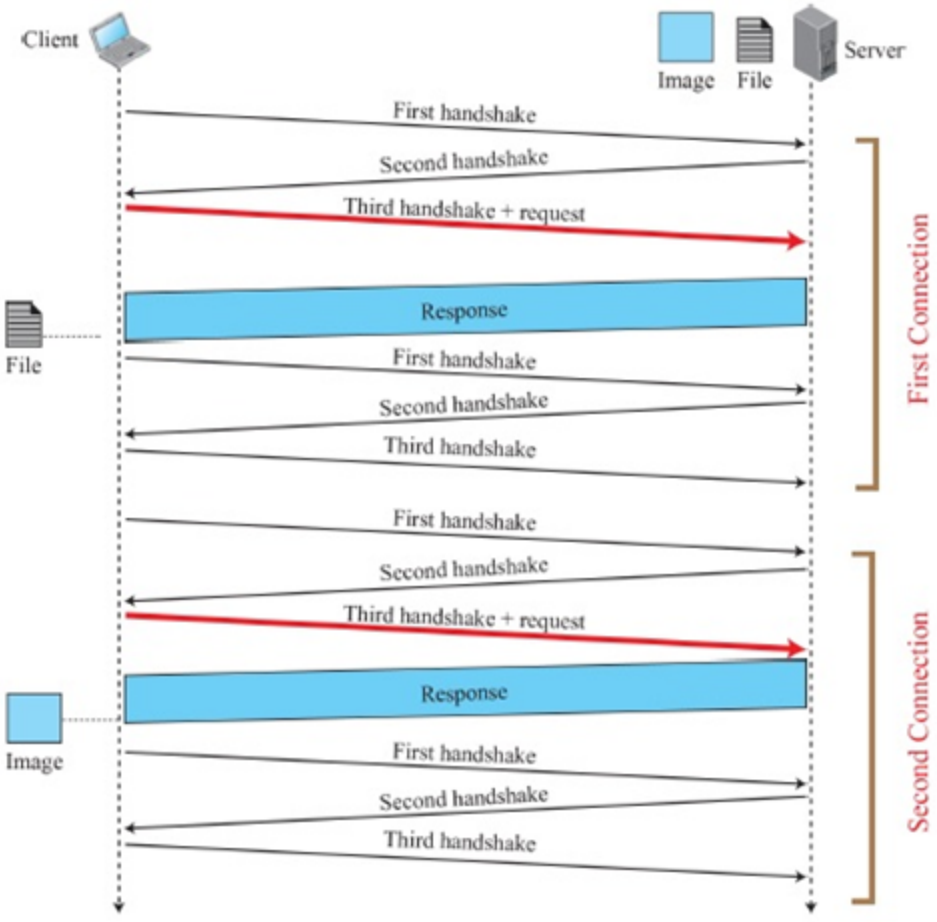
Unit-1

Q No 1 a) (11)



A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

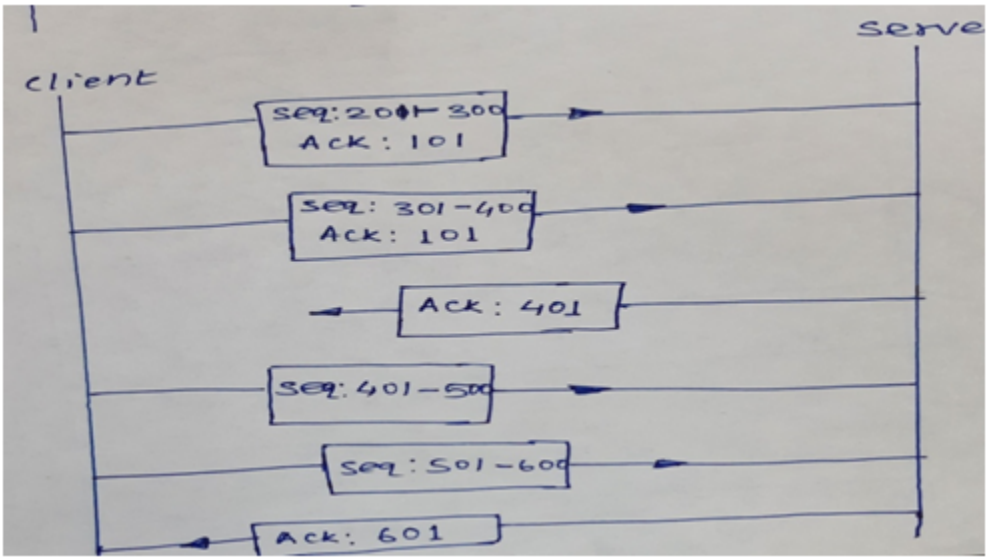
B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)



C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other. This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Q No 4 a) A) i)Cryptography is used to support Data Integrity? True or false. Justify your answer(3) (12)

ii)Ram got the following secrete English message from Shyam.

Wfns xuwjfix mfuunsjxx.

What will be the Original Message after Deciphering. (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Dinesh wants to secretly share a message to Sushant.
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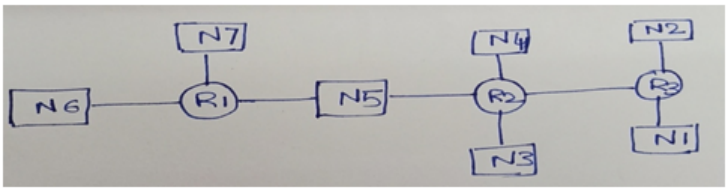
Unit-1

Q No 1 a) (11)



A) Consider the above network with two routers R1 and R2

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N7.

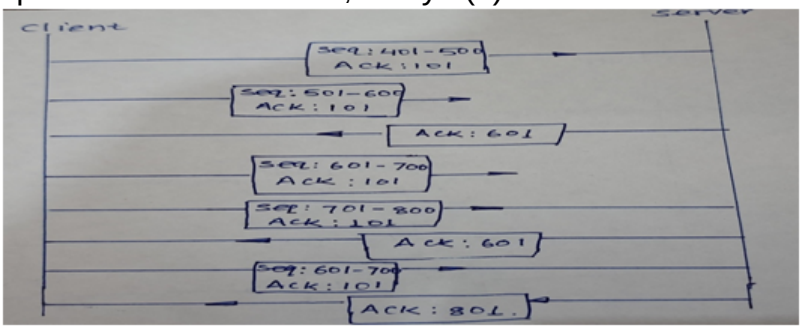
b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

B) A HTTP server receives a request message from HTTP client. How does server know when all the headers have arrived and the body of message is to follow? (3)

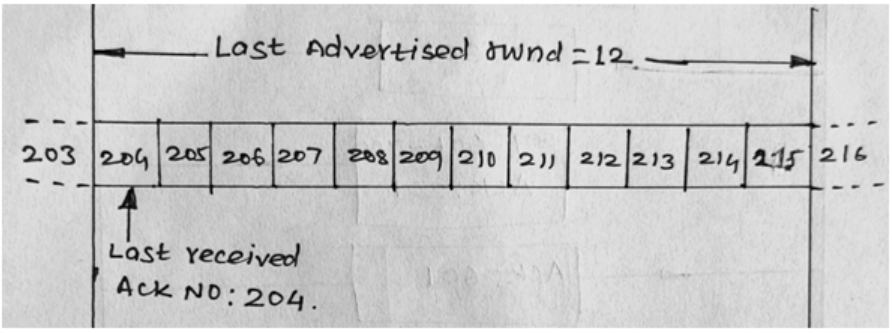
C) Given URL:
https://www.cumminscollege.org/academics/departments/computer-engineering/
Represent the above URL in the form of tree structure containing domain name and labels. (4)

Unit-2

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Unit-3

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is -

404 053 000 000 0001 (3)

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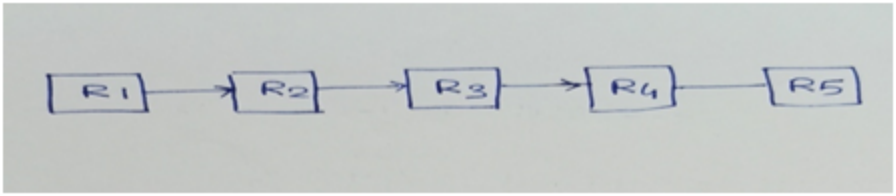
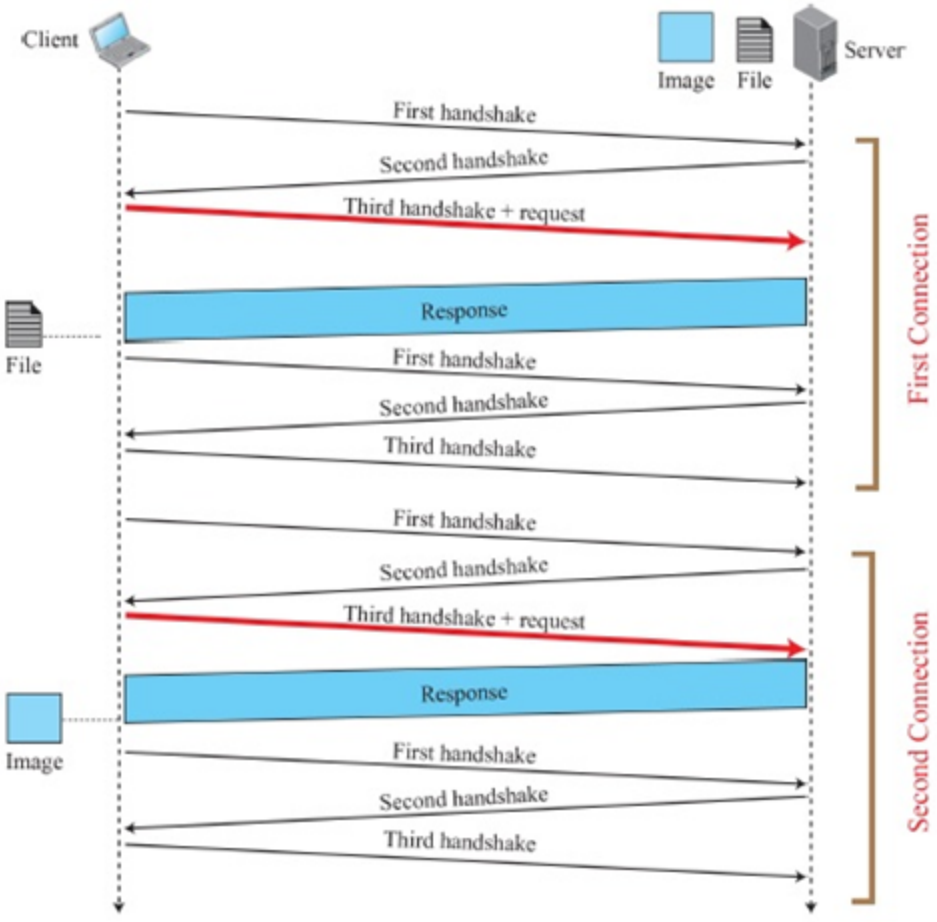
Unit-1

Q No 1 a) (11)



A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

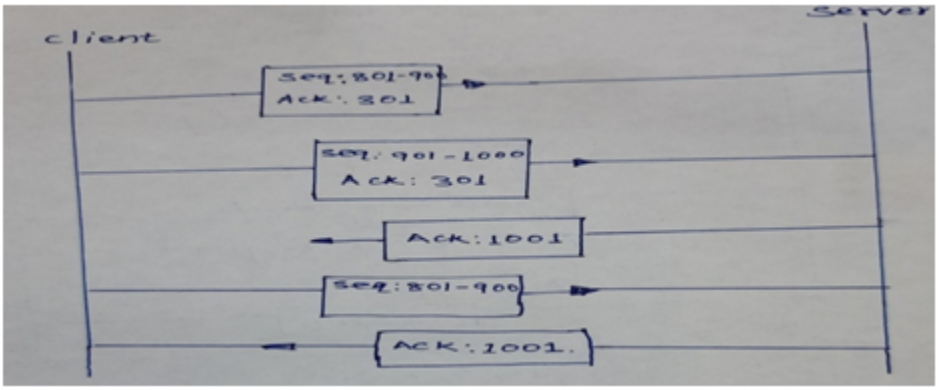
B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)



C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) A file of size 8000 bytes needs to be sent using TCP. The first byte is numbered as 3001 and it is assume to be initial sequence number. Each segment carries 2000 bytes. How many segments are created by TCP? Find out the sequence number of each segment. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) My dreams company has decided to deploy 802.11 network for its employees. The aim is to provide concurrent internet connectivity to all employees. Will CSMA/CD algorithm used in this scenario? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

208 092 000 000 117 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

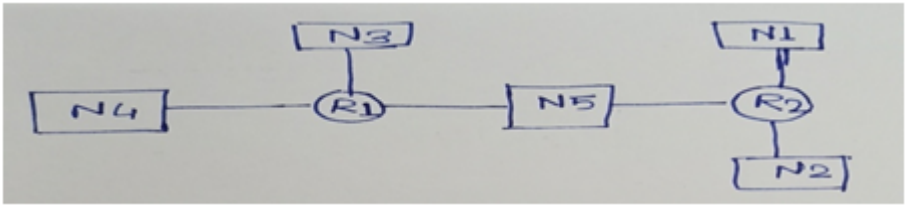
Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) (11)

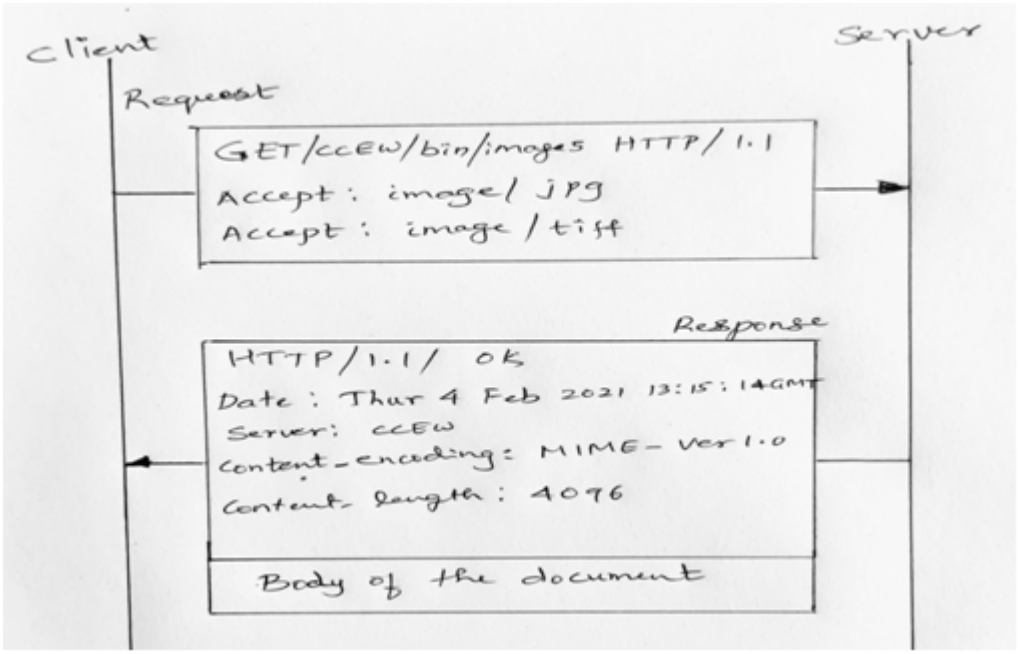


A) Consider the above network with two routers R1 and R2.

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N4.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

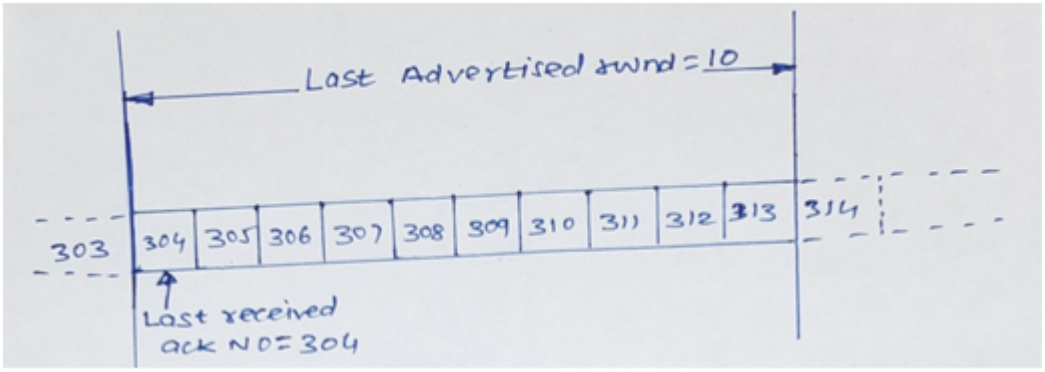
B) In the request message given below, If the client adds 'If Modified since', How the server responds? Distinguish between these two scenarios. (3)



C) A Client wants IP address for www.cumminscollege.org. For this purpose Client sends query to root server. What are the different ways a root server can resolves this query. Differentiate between these query resolving techniques.(4)

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 2500 bytes. Some time ago TCP receiver received 1500 bytes and they are acknowledged to the transmitter. Out of 1500 bytes, 900 bytes are yet to be pulled by the application process What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 304 to 311. Bytes 304 to 307 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C)'Fastnet' Company wants to deploy 802.11 network in their premises. The premises has three floors .The main aim is to provide concurrent internet connectivity to all employees. Whether a single access point will be sufficient to satisfy the given requirement? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is -

404 053 000 000 0001 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

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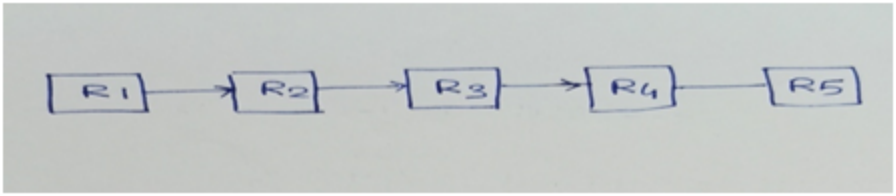
Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

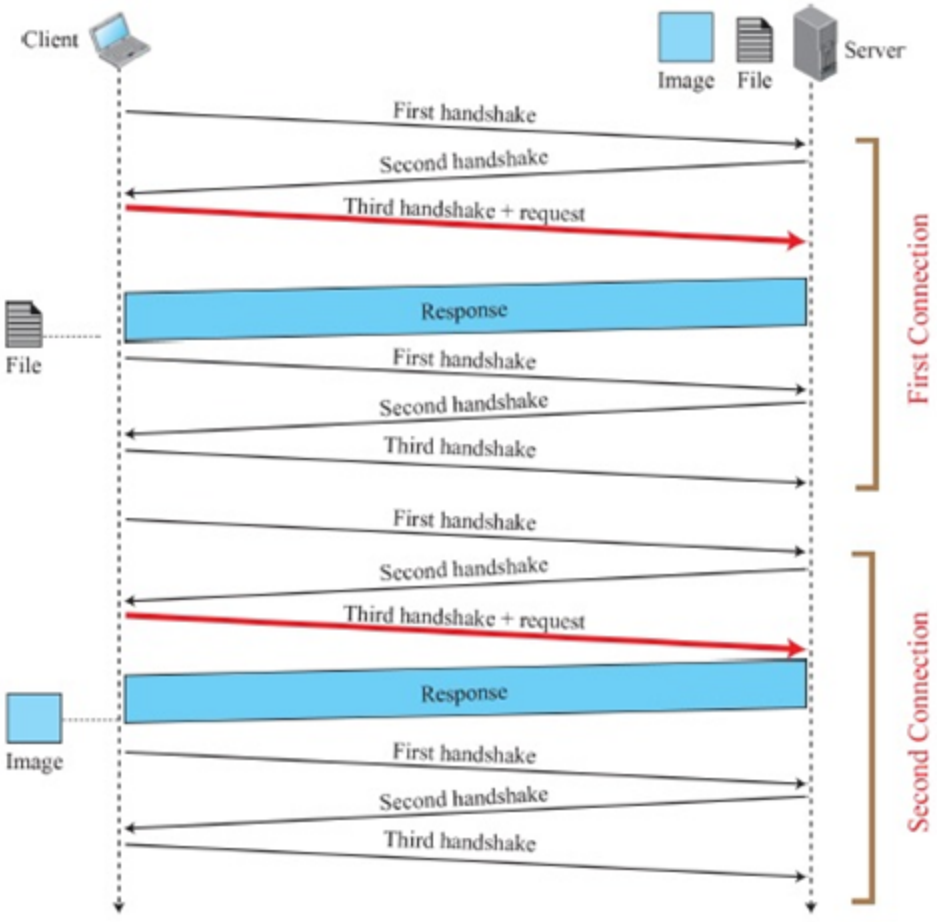
Unit-1

Q No 1 a) (11)



A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

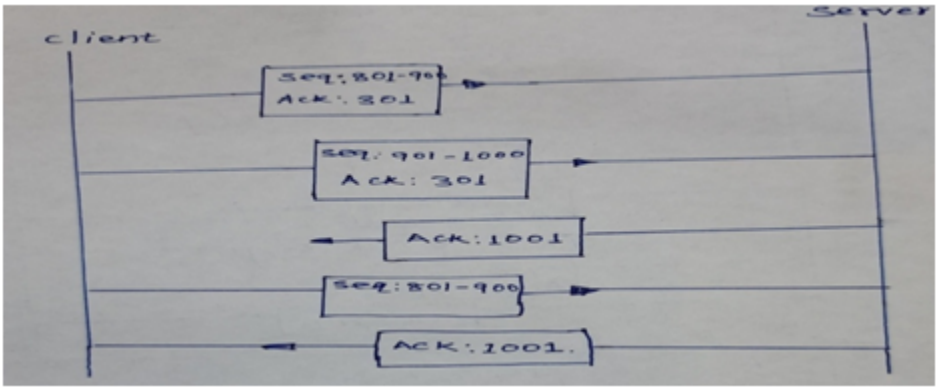
B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)



C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) A file of size 8000 bytes needs to be sent using TCP. The first byte is numbered as 3001 and it is assume to be initial sequence number. Each segment carries 2000 bytes. How many segments are created by TCP? Find out the sequence number of each segment. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) My dreams company has decided to deploy 802.11 network for its employees. The aim is to provide concurrent internet connectivity to all employees. Will CSMA/CD algorithm used in this scenario? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 300 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 240 number of computer systems in an organization. There are 8 departments and per department there can be minimum 30 computer systems. Choose appropriate addressing technique and justify your solution also gives the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is - 404 053 000 000 0001 (3)

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
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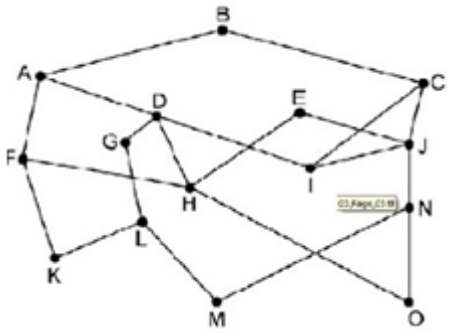
Unit-1

Q No 1 a) A) Consider the below given network, (11)



If a node wants to send a packet to all other nodes, suggest a technique used for this purpose. Justify your answer. How can any node avoid sending duplicate packet to the any other node?(4)

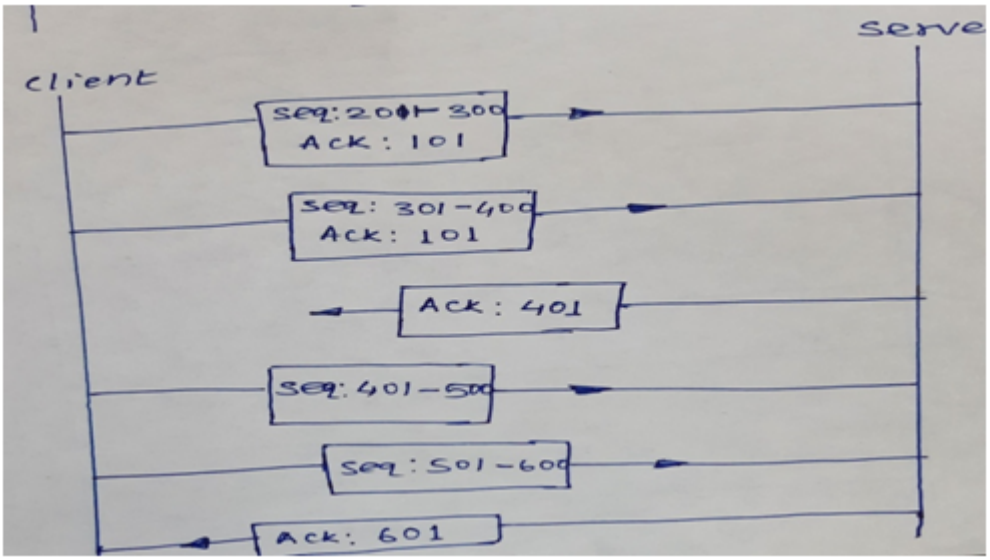
B) There are two ports/Connections for FTP, one for data and other for control. What would happen if there was only one port used for both data and control? (3)

C) Some Computer systems would like to communicate with each other as per their requirement may be in group or individually. Select the best solution between client server and peer to peer communication. How did you arrive at this solution? (4)

Unit-2

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.

a) Is this merging possible?

b) Discuss the prerequisite for this merging to happen.

c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is -

404 053 000 000 0001 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

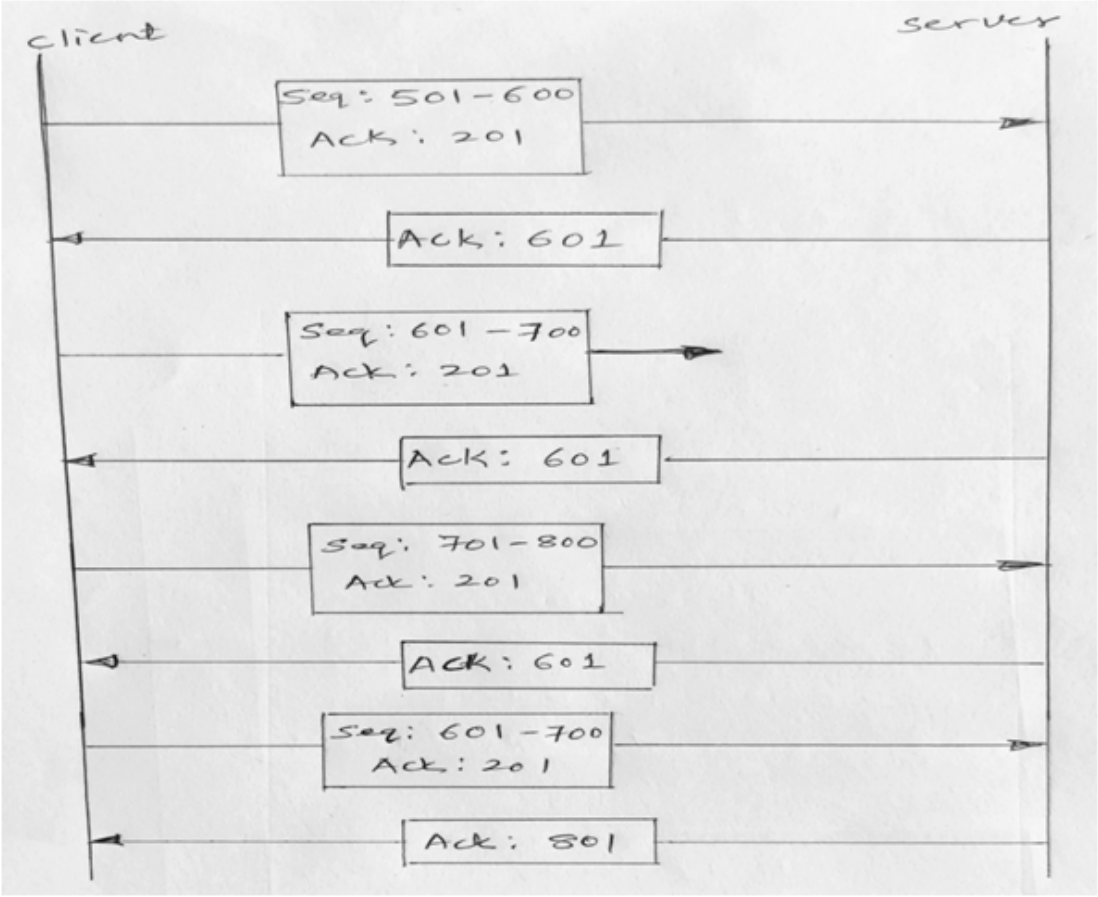
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other.
This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman
AJRW KARWP QJIIRWNBB
What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
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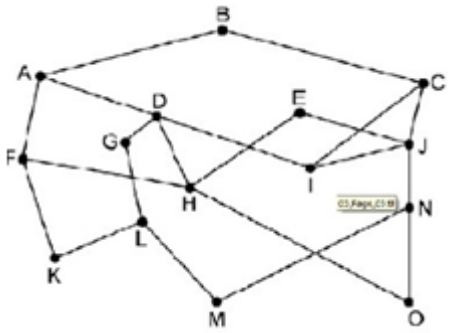
Unit-1

Q No 1 a) A) Consider the below given network, (11)



If a node wants to send a packet to all other nodes, suggest a technique used for this purpose. Justify your answer. How can any node avoid sending duplicate packet to the any other node?(4)

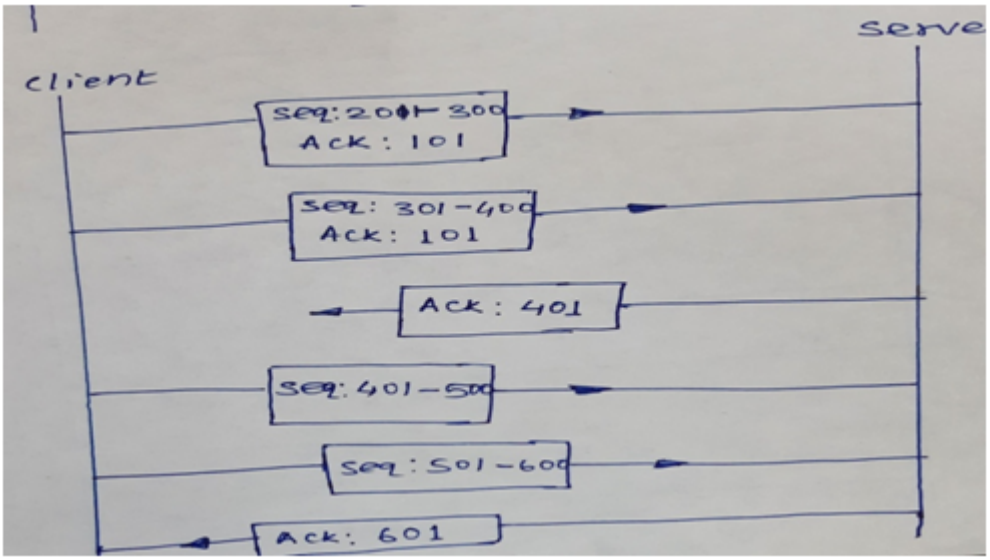
B) There are two ports/Connections for FTP, one for data and other for control. What would happen if there was only one port used for both data and control? (3)

C) Some Computer systems would like to communicate with each other as per their requirement may be in group or individually. Select the best solution between client server and peer to peer communication. How did you arrive at this solution? (4)

Unit-2

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
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5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.
a) Is this merging possible?
b) Discuss the prerequisite for this merging to happen.
c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography.(3) (12)

ii) Ajay received following cipher text from Vijay. After decryption what is the original message conveyed by Vijay to Ajay? (3)

JIKSA MIBLZ QDNZA IZMIV

B) i) Identify various fields in International mobile station equipment identity?(3)

ii) Identify and Name various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

262 017 000 000 012 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

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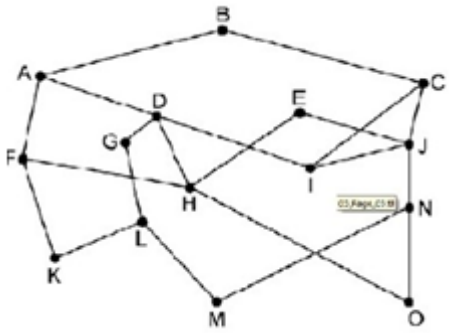
Unit-1

Q No 1 a) A) Consider the below given network, (11)



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C) Some Computer systems would like to communicate with each other as per their requirement may be in group or individually. Select the best solution between client server and peer to peer communication. How did you arrive at this solution? (4)

Unit-2

Q No 2 a) A) A file of size 8000 bytes needs to be sent using TCP. The first byte is numbered as 3001 and it is assume to be initial sequence number. Each segment carries 2000 bytes. How many segments are created by TCP? Find out the sequence number of each segment. (4) (12)

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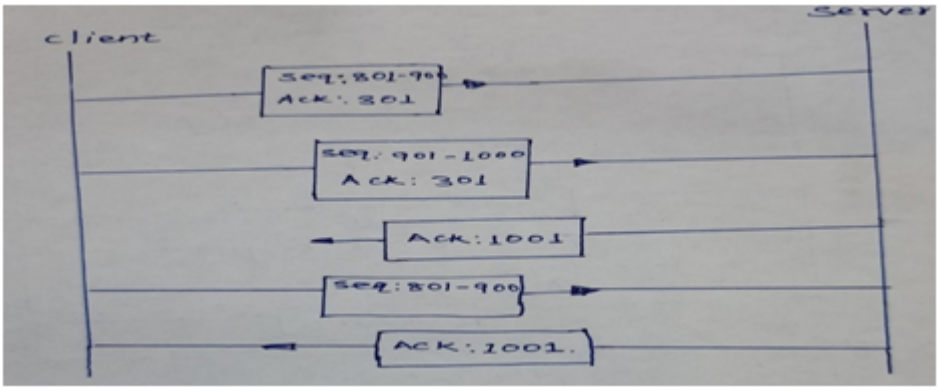

C) My dreams company has decided to deploy 802.11 network for its employees. The aim is to provide concurrent internet connectivity to all employees. Will CSMA/CD algorithm used in this scenario? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 300 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
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B) There are 240 number of computer systems in an organization. There are 8 departments and per department there can be minimum 30 computer systems. Choose appropriate addressing technique and justify your solution also gives the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

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B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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Instructions :

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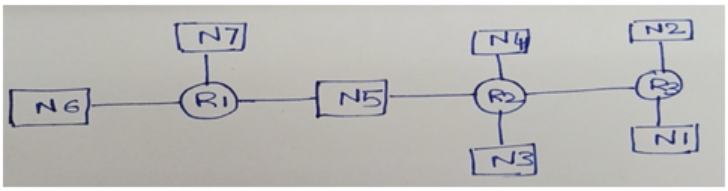
Unit-1

Q No 1 a) (11)



A) Consider the above network with two routers R1 and R2

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N7.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

B) A HTTP server receives a request message from HTTP client. How does server know when all the headers have arrived and the body of message is to follow? (3)

C) Given URL:
https://www.cumminscollege.org/academics/departments/computer-engineering/
Represent the above URL in the form of tree structure containing domain name and labels. (4)

Unit-2

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

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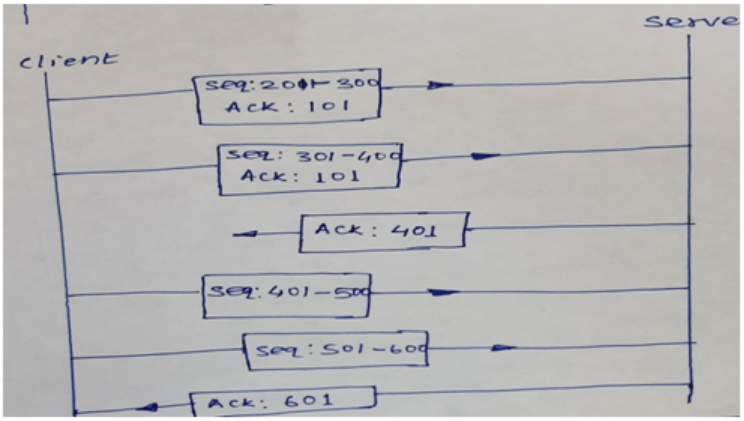


C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Unit-3

Q No 3 a) A) There is need for an organization to design a network for 200 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 16000 number of computer systems in an organization. There are 16 departments and per department there can be minimum 1000 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography.(3) (12)

ii) Ajay received following cipher text from Vijay. After decryption what is the original message conveyed by Vijay to Ajay? (3)

JIKSA MIBLZ QDNZA IZMIV

B) i) Identify various fields in International mobile station equipment identity?(3)

ii) Identify and Name various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

262 017 000 000 012 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

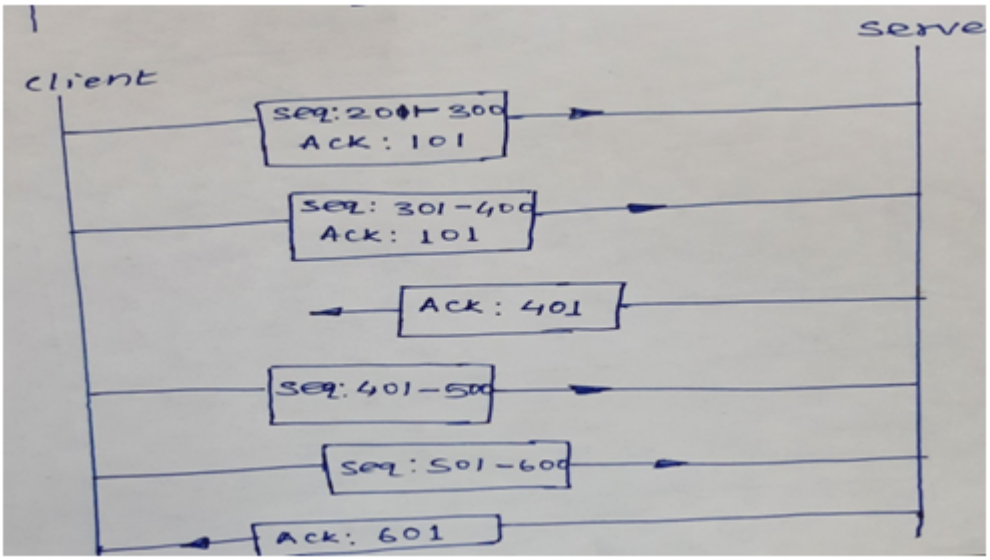
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.
a) Is this merging possible?
b) Discuss the prerequisite for this merging to happen.
c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman

AJRW KARWP QJIIRWNBB

What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)
1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
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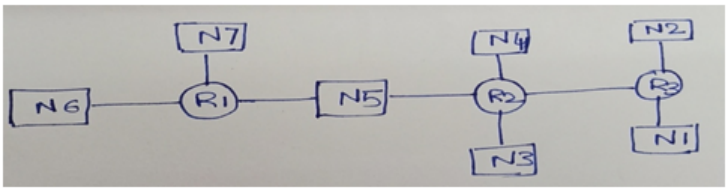
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) (11)



A) Consider the above network with two routers R1 and R2

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N7.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

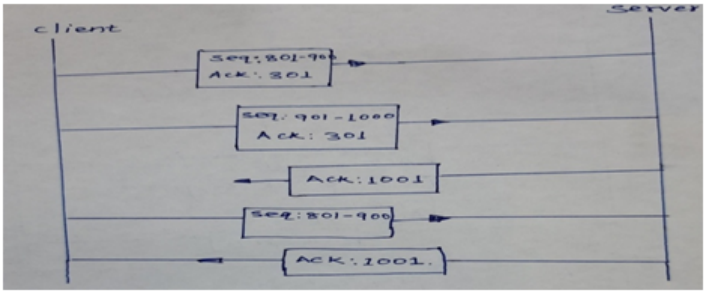
B) A HTTP server receives a request message from HTTP client. How does server know when all the headers have arrived and the body of message is to follow? (3)

C) Given URL:
https://www.cumminscollege.org/academics/departments/computer-engineering/
Represent the above URL in the form of tree structure containing domain name and labels. (4)

Unit-2

Q No 2 a) A) A file of size 8000 bytes needs to be sent using TCP. The first byte is numbered as 3001 and it is assume to be initial sequence number. Each segment carries 2000 bytes. How many segments are created by TCP? Find out the sequence number of each segment. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) My dreams company has decided to deploy 802.11 network for its employees. The aim is to provide concurrent internet connectivity to all employees. Will CSMA/CD algorithm used in this scenario? Justify your answer. (4)

Unit-3

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)
ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)
UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.
Given: International mobile subscriber identity number is -
208 092 000 000 117 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

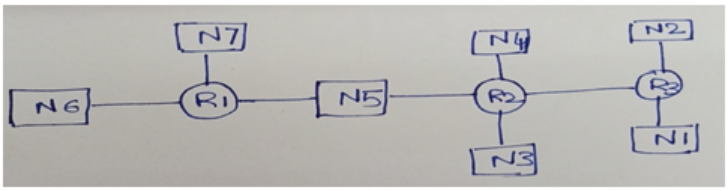
Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) (11)



A) Consider the above network with two routers R1 and R2

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N7.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

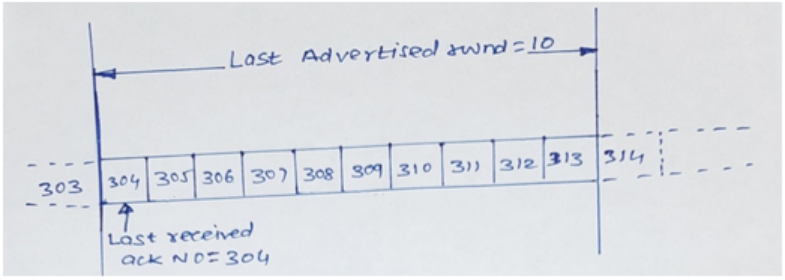
B) A HTTP server receives a request message from HTTP client. How does server know when all the headers have arrived and the body of message is to follow? (3)

C) Given URL:
https://www.cumminscollege.org/academics/departments/computer-engineering/
Represent the above URL in the form of tree structure containing domain name and labels. (4)

Unit-2

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 2500 bytes. Some time ago TCP receiver received 1500 bytes and they are acknowledged to the transmitter. Out of 1500 bytes, 900 bytes are yet to be pulled by the application process What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 304 to 311. Bytes 304 to 307 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C)'Fastnet' Company wants to deploy 802.11 network in their premises. The premises has three floors .The main aim is to provide concurrent internet connectivity to all employees. Whether a single access point will be sufficient to satisfy the given requirement? Justify your answer. (4)

Unit-3

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.
a) Is this merging possible?
b) Discuss the prerequisite for this merging to happen.
c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A) i)Cryptography is used to support Data Integrity? True or false. Justify your answer(3) (12)

ii)Ram got the following secrete English message from Shyam.

Wfns xuwjfix mfuunsjxx.

What will be the Original Message after Deciphering. (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Dinesh wants to secretly share a message to Sushant.
2. Deepak wants to send an important file over the Internet to Ravi. Ravi should get the same file Intact
3. Nisha has become a friend of Reva over Facebook. Reva shows interest to purchase product from Nisha and also done a partial payment. Nisha has to fulfil the order completely. Now, Reva is denying that she has not placed any such order.

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

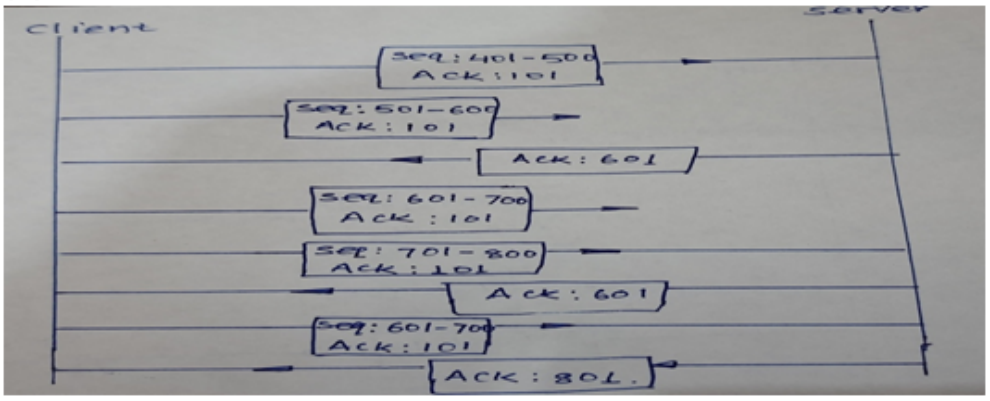
Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

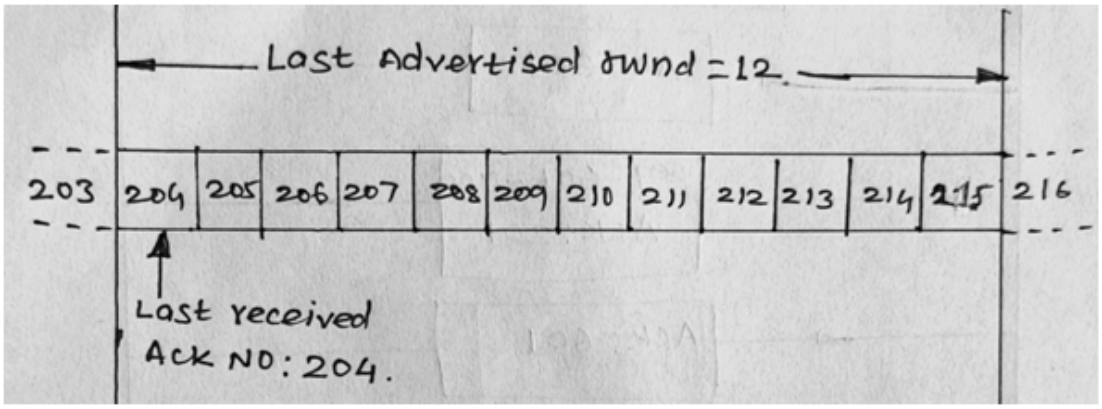
C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other. This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman

AJRW KARWP QJIIRWNBB

What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

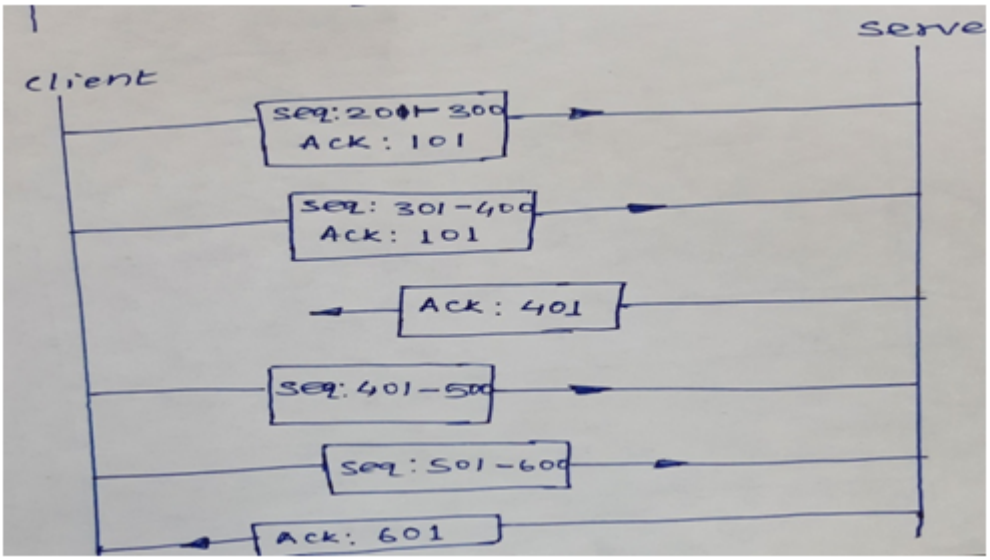
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) TCP needs to send a file containing 12000 bytes. The first byte is numbered as 6001 and it is assumed to be initial segment number. Each segment carries 4000 bytes. How many segments are created by TCP. Find out the sequence number of each segment? (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Computer Department of Shaswat Engineering College wants to deploy a wireless LAN network. The main purpose is to facilitate the students to be able to access the live streaming lecture videos. Suggest a suitable wireless LAN standard to satisfy this need with justification. (4)

Q No 3 a) A) There is need for an organization to design a network for 200 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 16000 number of computer systems in an organization. There are 16 departments and per department there can be minimum 1000 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

208 092 000 000 117 (3)

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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Instructions :

1. All questions are compulsory.
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Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

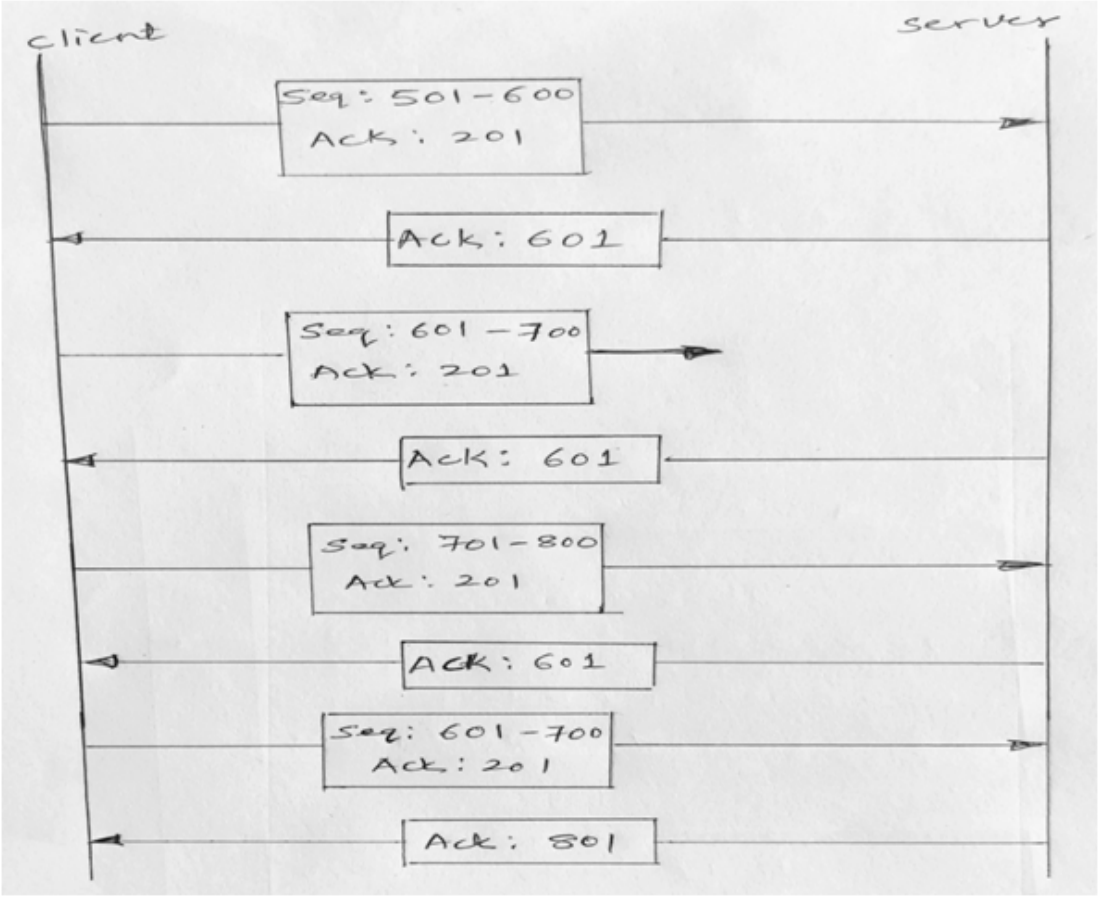
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 300 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 240 number of computer systems in an organization. There are 8 departments and per department there can be minimum 30 computer systems. Choose appropriate addressing technique and justify your solution also gives the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is - 404 053 000 000 0001 (3)

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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Instructions :

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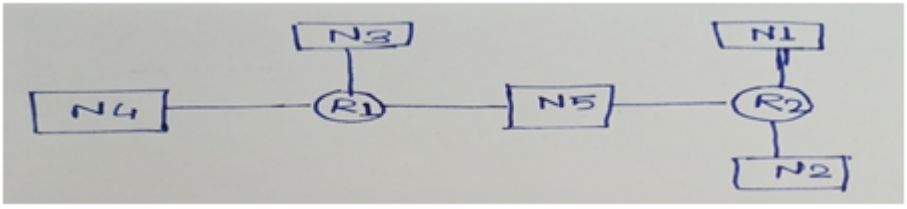
Unit-1

Q No 1 a) (11)

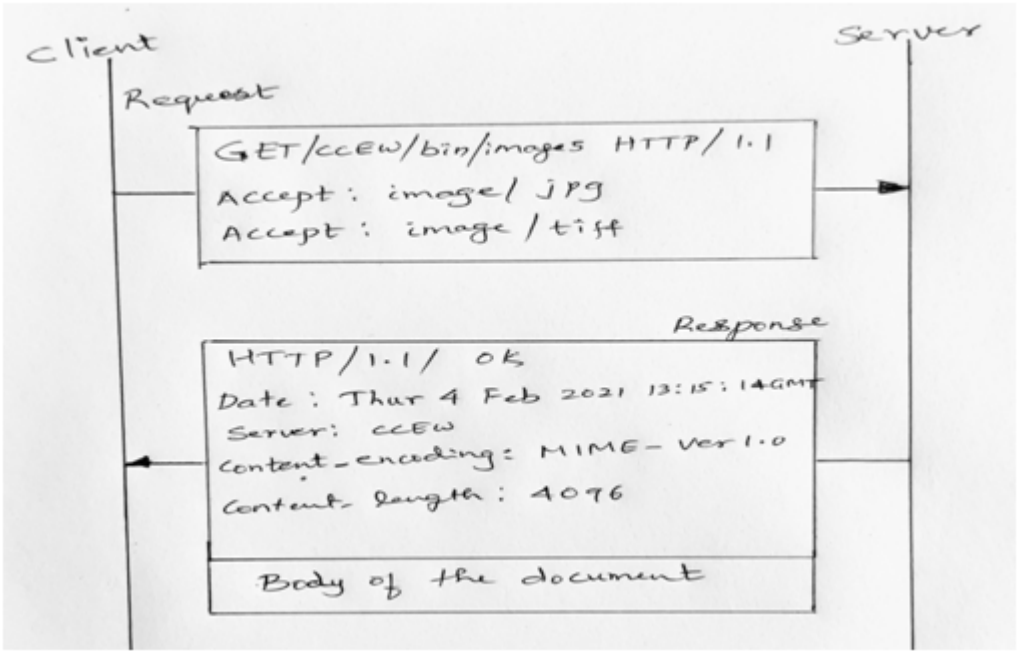


A) Consider the above network with two routers R1 and R2.

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N4.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

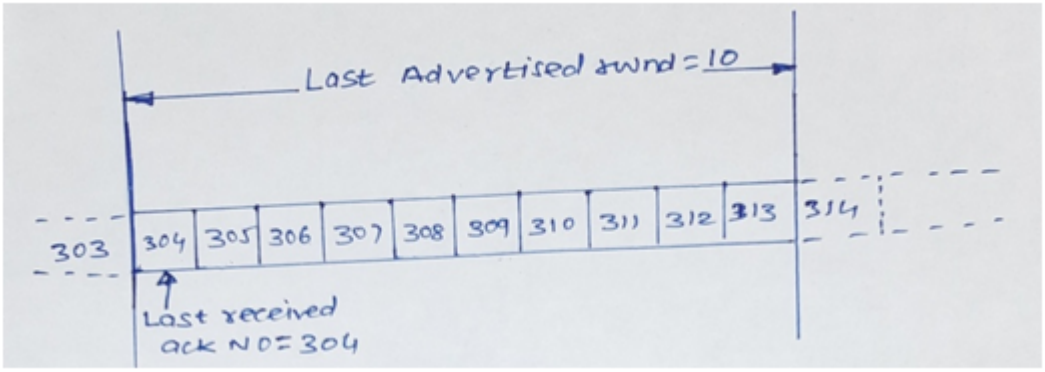
B) In the request message given below, If the client adds 'If Modified since', How the server responds? Distinguish between these two scenarios. (3)



C) A Client wants IP address for www.cumminscollege.org. For this purpose Client sends query to root server. What are the different ways a root server can resolves this query. Differentiate between these query resolving techniques.(4)

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 2500 bytes. Some time ago TCP receiver received 1500 bytes and they are acknowledged to the transmitter. Out of 1500 bytes, 900 bytes are yet to be pulled by the application process What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 304 to 311. Bytes 304 to 307 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C)'Fastnet' Company wants to deploy 802.11 network in their premises. The premises has three floors .The main aim is to provide concurrent internet connectivity to all employees. Whether a single access point will be sufficient to satisfy the given requirement? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

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5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman

AJRW KARWP QJIIRWNBB

What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry

2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact

3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

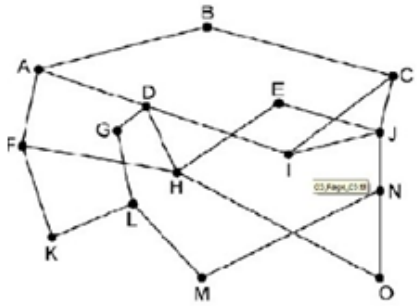
Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) Consider the below given network, (11)



If a node wants to send a packet to all other nodes, suggest a technique used for this purpose. Justify your answer. How can any node avoid sending duplicate packet to the any other node?(4)

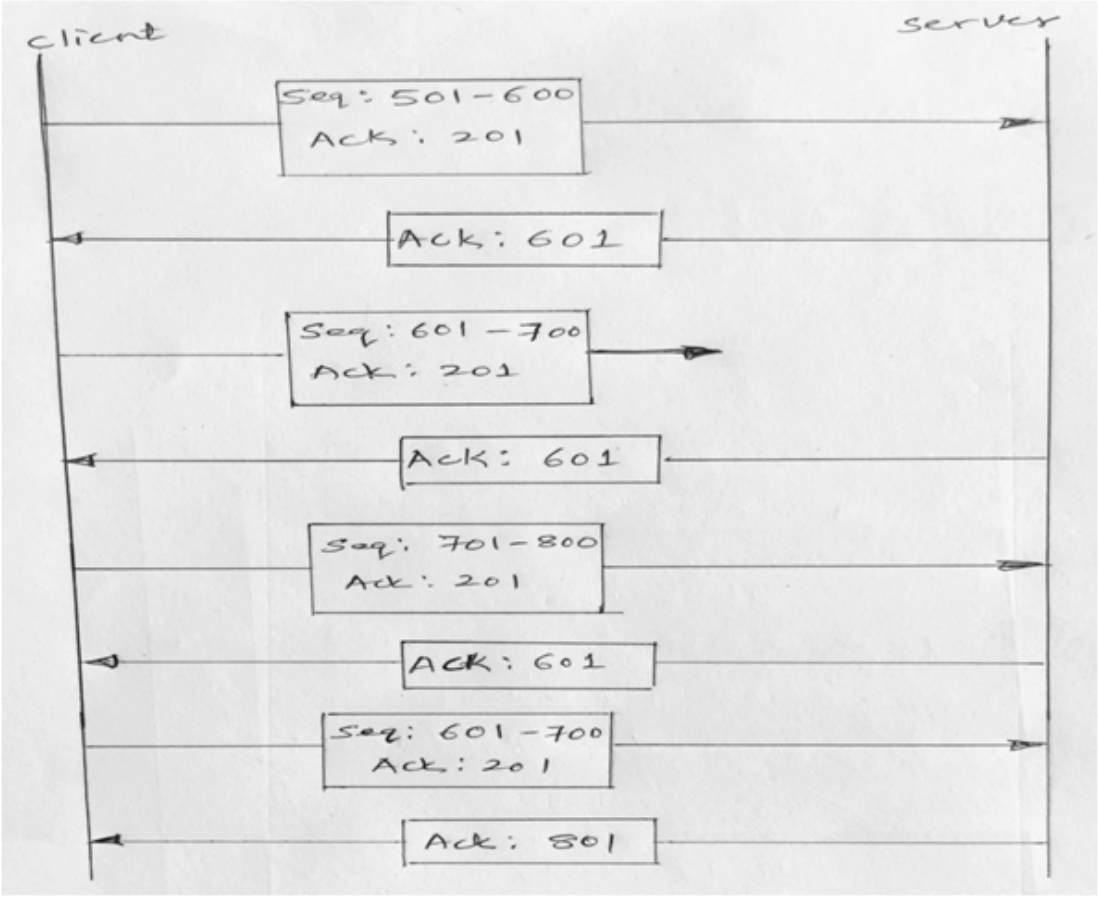
B) There are two ports/Connections for FTP, one for data and other for control. What would happen if there was only one port used for both data and control? (3)

C) Some Computer systems would like to communicate with each other as per their requirement may be in group or individually. Select the best solution between client server and peer to peer communication. How did you arrive at this solution? (4)

Unit-2

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 500 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 70000 number of computer systems in an organization. There are 1000 departments and per department there can be minimum 70 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -
208 092 000 000 117 (3)

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

Third_Year Computer

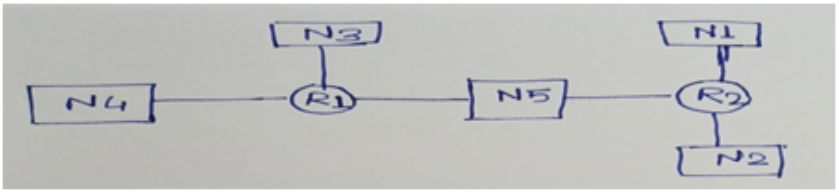
COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

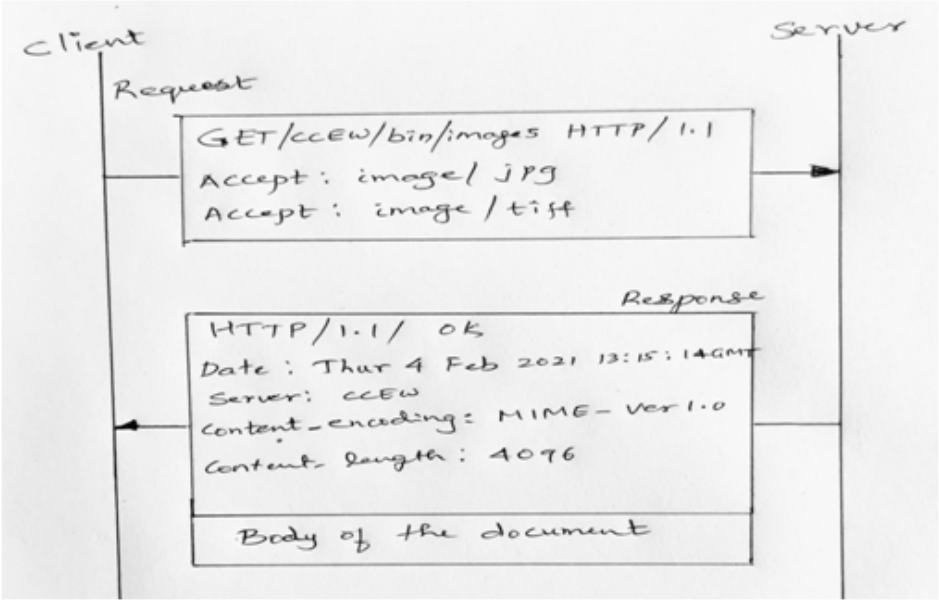
Unit-1

Q No 1 a) 

(11)

A) Consider the above network with two routers R1 and R2.
a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N4.
b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

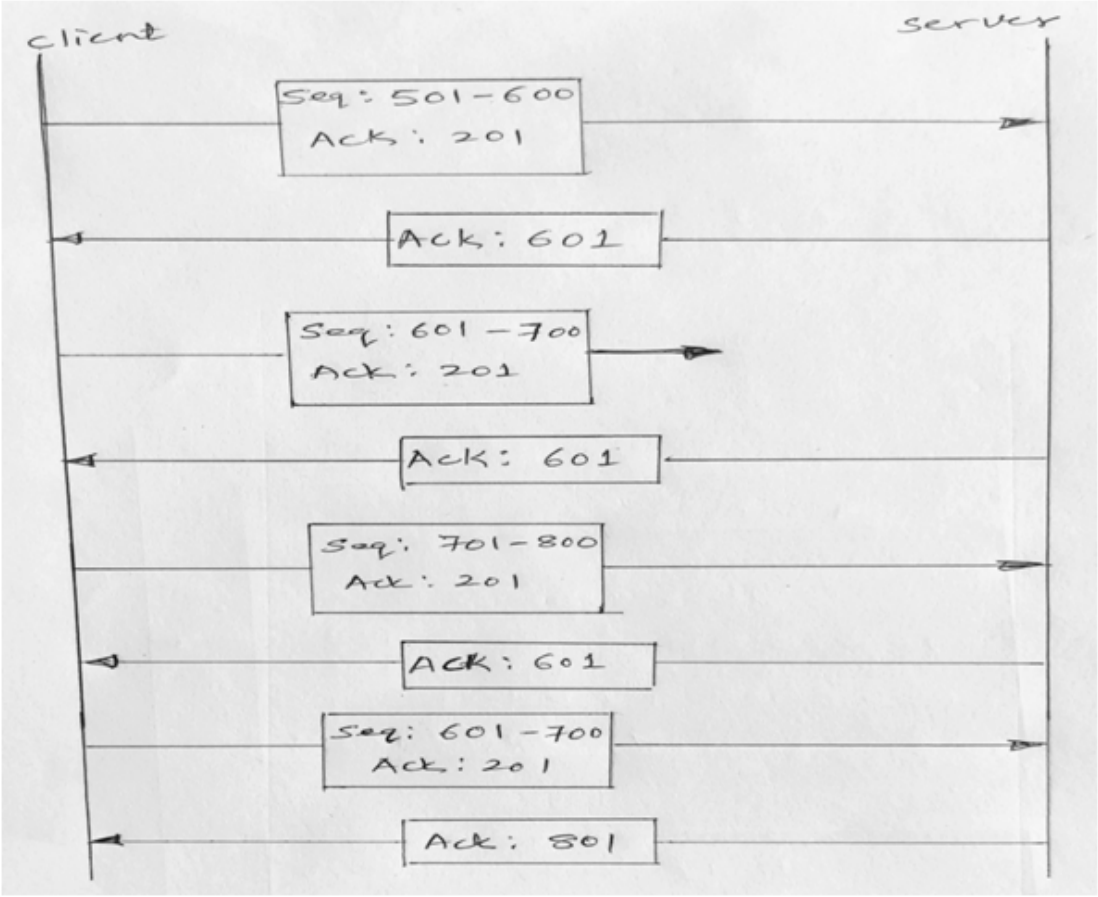
B) In the request message given below, If the client adds 'If Modified since', How the server responds? Distinguish between these two scenarios. (3)



C) A Client wants IP address for www.cumminscollege.org. For this purpose Client sends query to root server. What are the different ways a root server can resolves this query. Differentiate between these query resolving techniques.(4)

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 600 users. It is required that all user get internet connectivity. Design suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) An Organization has 100 computer systems. These systems need to get connected to outside world through internet and also need to communicate with each other.
This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A) i)Cryptography is used to support Data Integrity? True or false. Justify your answer(3) (12)

ii)Ram got the following secrete English message from Shyam.

Wfns xuwjfix mfuunsjxx.

What will be the Original Message after Deciphering. (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Dinesh wants to secretly share a message to Sushant.
2. Deepak wants to send an important file over the Internet to Ravi. Ravi should get the same file Intact
3. Nisha has become a friend of Reva over Facebook. Reva shows interest to purchase product from Nisha and also done a partial payment. Nisha has to fulfil the order completely. Now, Reva is denying that she has not placed any such order.

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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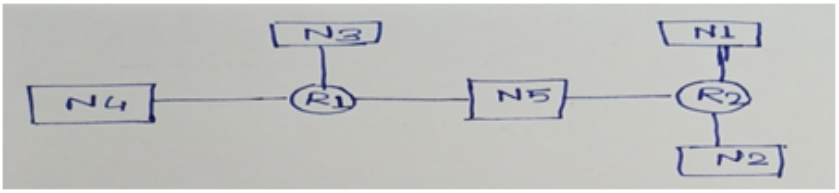
Unit-1

Q No 1 a) 

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A) Consider the above network with two routers R1 and R2.
a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N4.
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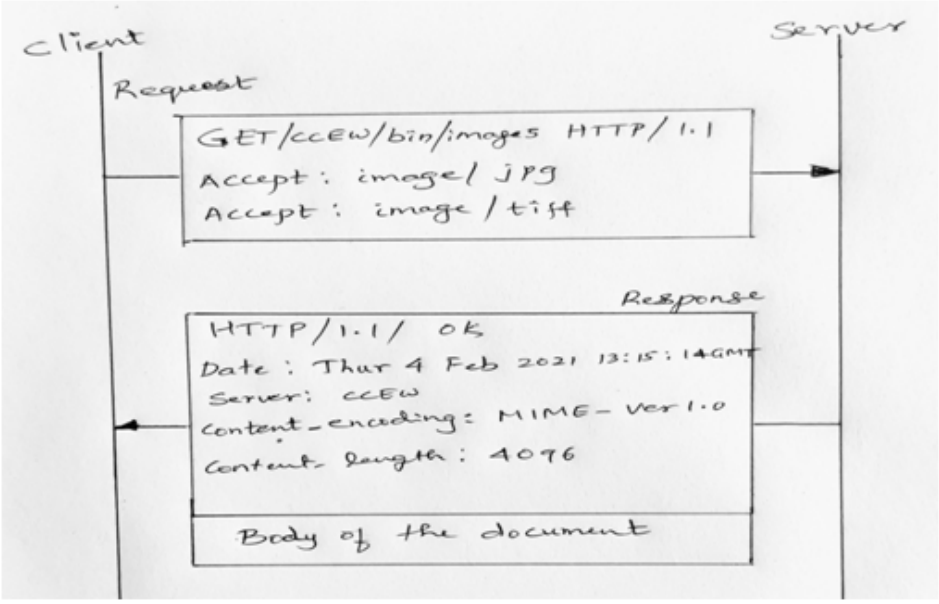

C) A Client wants IP address for www.cumminscollege.org. For this purpose Client sends query to root server. What are the different ways a root server can resolves this query. Differentiate between these query resolving techniques.(4)

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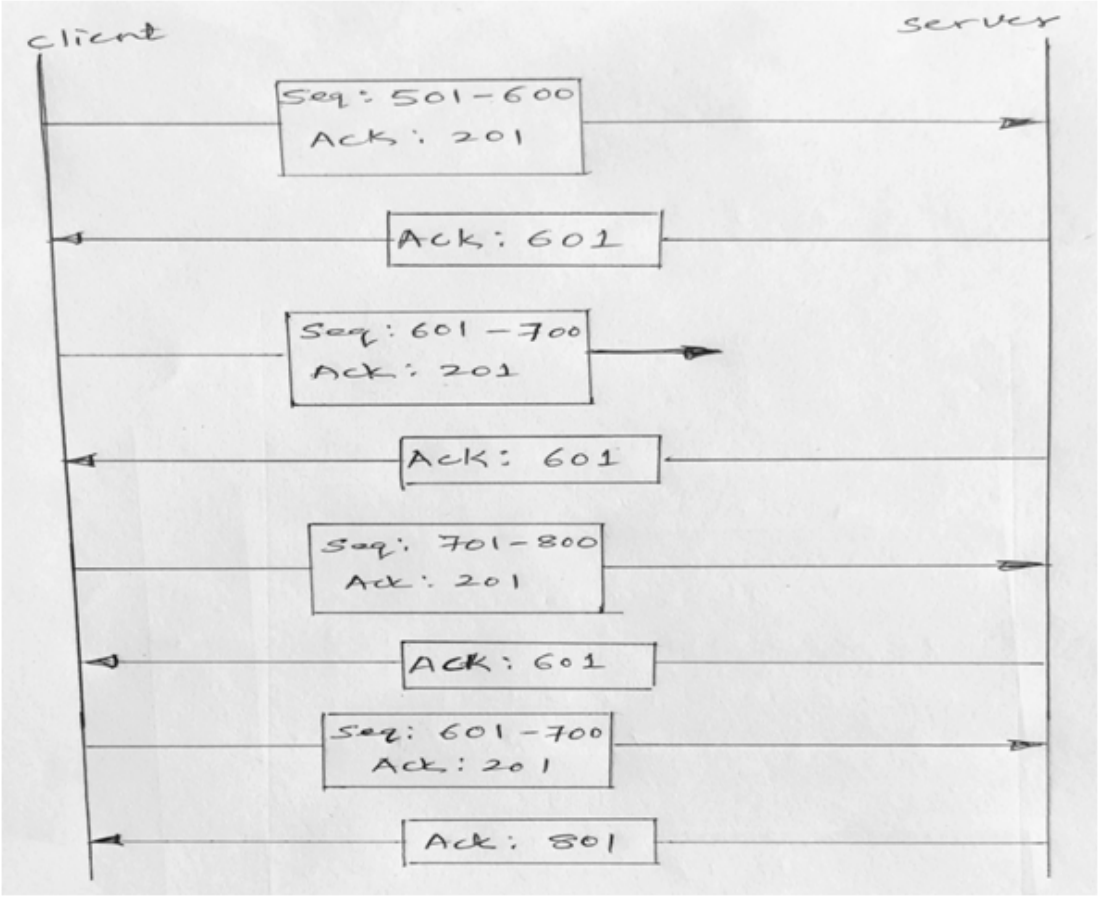

C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

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This organization can only buy a single IP address from ISP. In this scenario how every computer can communicate with outside world and also communicate with other computer systems in the organization? Discuss various solutions. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman
AJRW KARWP QJIIRWNBB
What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
3.Sarika has become a friend of Suman over Facebook. Suman shows interest to purchase product from sarika and also done a partial payment. Sarika has to fulfil the order completely. Now Suman is denying that she has not placed any such order.

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

Duration : 02:00 Hours | Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

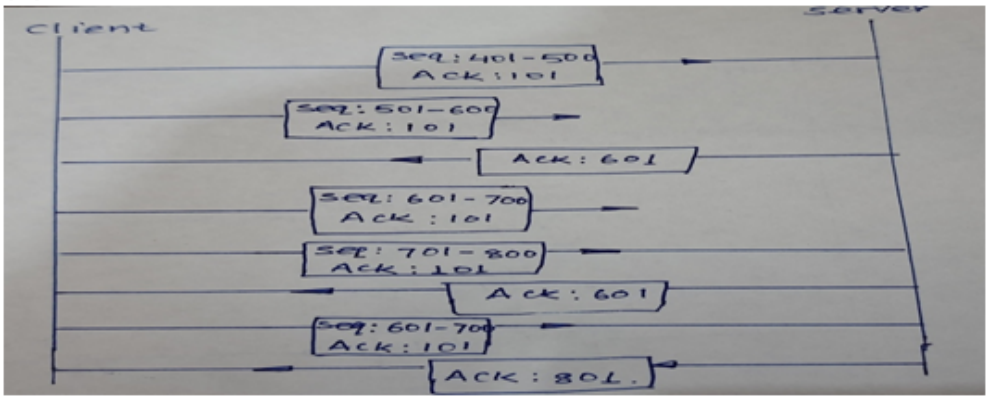
Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

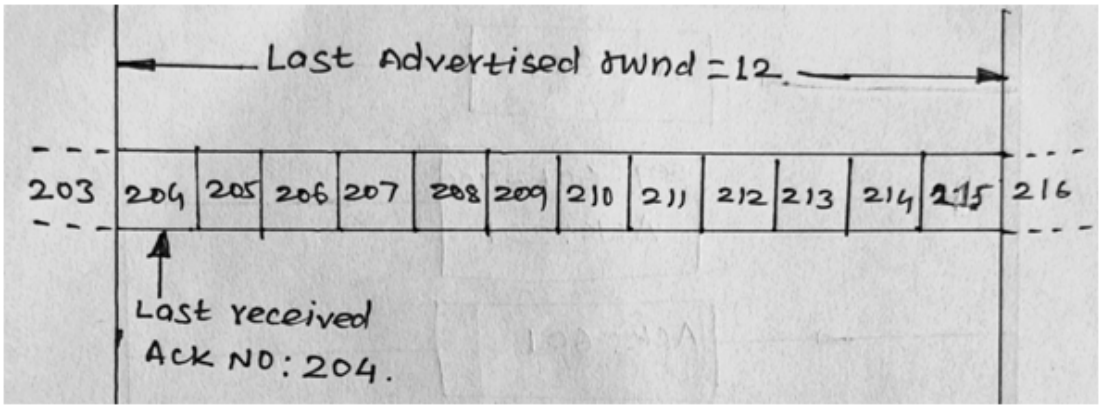
C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 204 to 211. Bytes 204 to 208 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

Q No 3 a) A) There is need for an organization to design a network for 200 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 16000 number of computer systems in an organization. There are 16 departments and per department there can be minimum 1000 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii) Ram got the following cipher text from Laxman

AJRW KARWP QJIIRWNBB

What will be the original plaintext after deciphering? (3)

B) Identify the appropriate security principle as well as the required security technique in the following scenarios. Justify your answer (6)

1. Alex wants to secretly share a message to Carry
2. John wants to send an important file over the Internet to Donald. Donald should get the same file Intact
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CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a) A) A large network uses OSPF protocol. Every router builds link state packets to all other routers. In this situation, a router which receives these packets may forward these link state packets or it may discard some link state packets. Examine the above situation and discuss when a router forward does or discard link state packets. (4) (11)

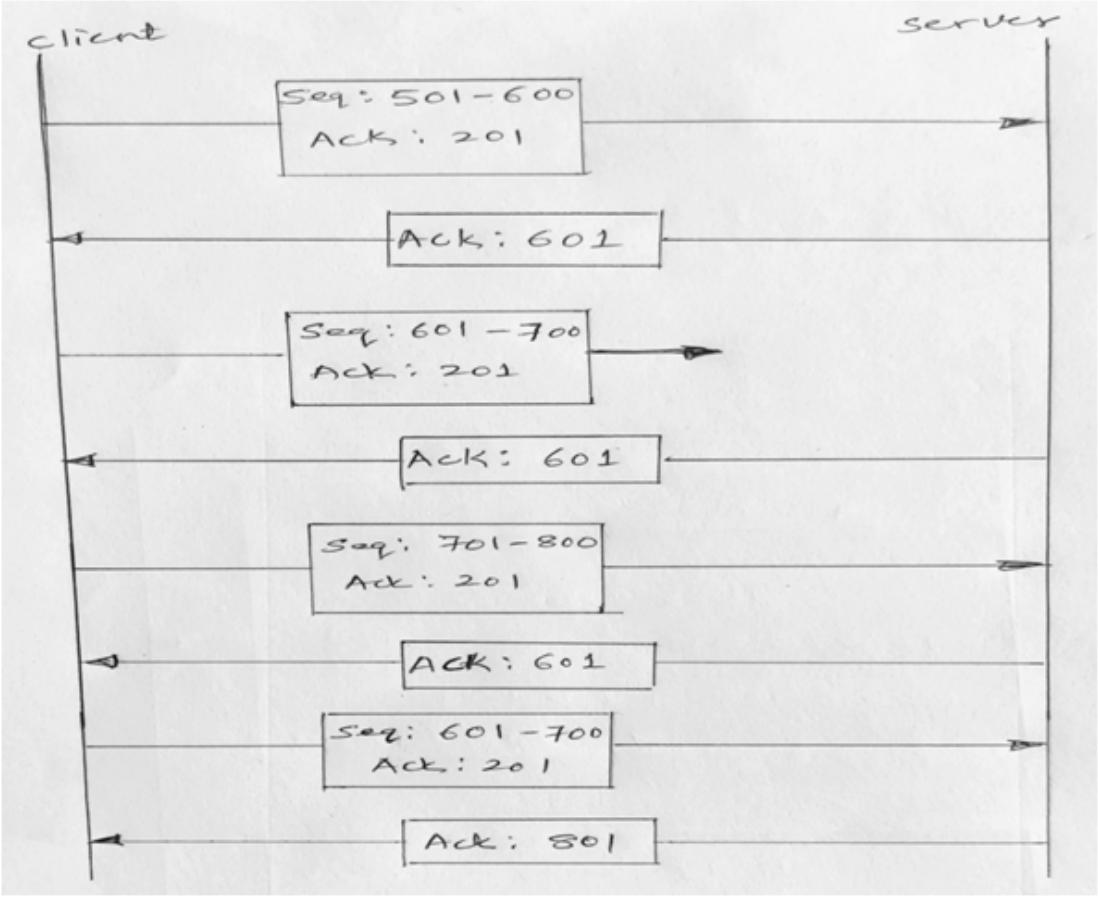
B) One Client Machine is using HTTP to download a file from the server. Another client machine uses FTP to do the same. Differentiate between the above two protocols to suggest which one is appropriate? (3)

C) A client from an organization wants to hide her IP Address while browsing the web. Select an appropriate type of proxy server for this purpose. Differentiate the types of proxy server from which selection was made? (4)

Unit-2

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 3000 bytes. Some time ago, TCP receiver received 1800 bytes and they are acknowledged to the transmitter. Out of 1800 bytes, 800 bytes are yet to be pulled by the application process. What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4)



C) Identify the appropriate wireless LAN standard which uses OFDM technique and MIMO Antena technique. Give suitable application scenario where this standard will be more preferable compared to other available standards. (4)

Q No 3 a) A) There is need for an organization to design a network for 200 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 16000 number of computer systems in an organization. There are 16 departments and per department there can be minimum 1000 computer systems. Choose appropriate addressing technique and justify your solution also give the first network address of first department. (5)

Unit-4

Q No 4 a) A) i)A startup company in the domain of gaming has decided to protect its network from outside threats or the attacks. Suggest a suitable model which will mitigate the requirement. (3) (12)

ii) If Shalini has received the following cipher text from Sujata. What is the original message conveyed by sujata to Shalini ? (3)

M PSZI RIXASVOMRK

B) i) Like in a networking concept which has different types of addresses like physical, IP, Port addresses, Identify various identifiers used in GSM systems. (3)

ii) Identify and Name various fields from the given IMSI number.

Given: International mobile subscriber identity number is - 404 053 000 000 0001 (3)

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Third_Year Computer

COMPUTER NETWORKS (CE3101)

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Instructions :

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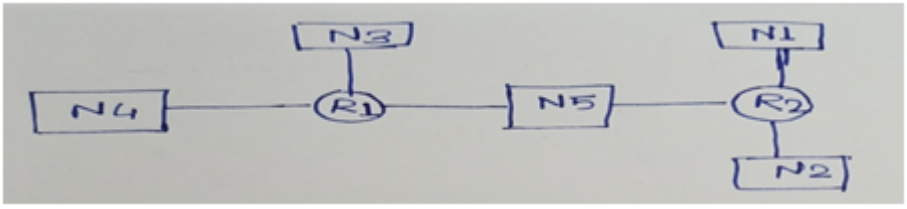
Unit-1

Q No 1 a) (11)

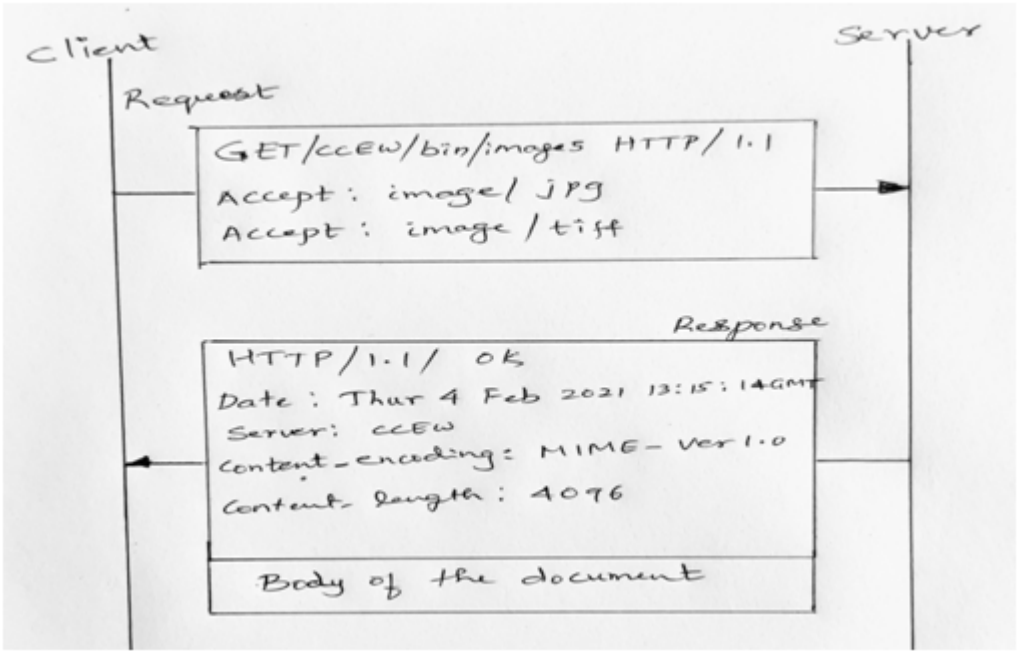


A) Consider the above network with two routers R1 and R2.

a) Build the forwarding table for R1 and R2 to find how many number of hops required for a packet to reach network N1 to Network N4.

b) At some time, router R1 removes route information (entry) from its forwarding table for the router R2. Analyze and discuss the scenario due to which the route information entry for router R2 is removed. (4)

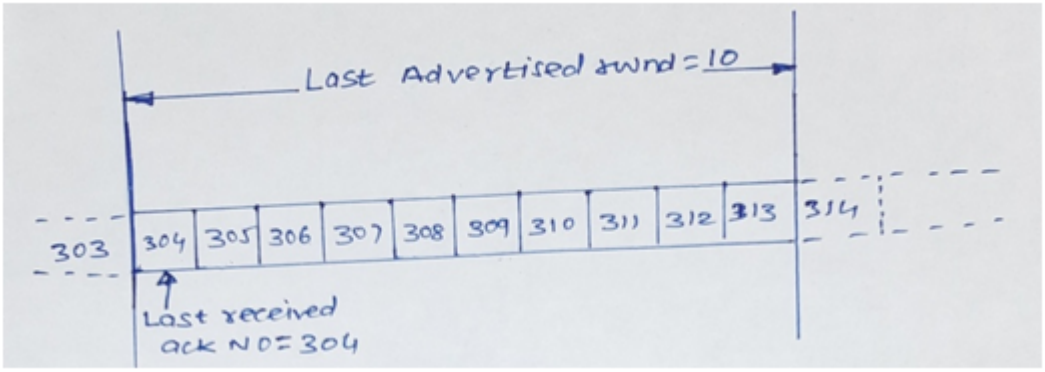
B) In the request message given below, If the client adds 'If Modified since', How the server responds? Distinguish between these two scenarios. (3)



C) A Client wants IP address for www.cumminscollege.org. For this purpose Client sends query to root server. What are the different ways a root server can resolves this query. Differentiate between these query resolving techniques.(4)

Q No 2 a) A) A TCP receiver has been allocated with buffer of size 2500 bytes. Some time ago TCP receiver received 1500 bytes and they are acknowledged to the transmitter. Out of 1500 bytes, 900 bytes are yet to be pulled by the application process What will be the current receiver window? Also draw the receiver window and the size of allocated buffer for both the scenarios. (4) (12)

B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 304 to 311. Bytes 304 to 307 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C)'Fastnet' Company wants to deploy 802.11 network in their premises. The premises has three floors .The main aim is to provide concurrent internet connectivity to all employees. Whether a single access point will be sufficient to satisfy the given requirement? Justify your answer. (4)

Q No 3 a) A) There is need for an organization to design a network for 300 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)
The design should address the following aspects.
1.Topology Used
2.Cabling Details
3.IP addressing Scheme
4.Network Devices
5. Securing network from outside threats.

B) There are 240 number of computer systems in an organization. There are 8 departments and per department there can be minimum 30 computer systems. Choose appropriate addressing technique and justify your solution also gives the first network address of first department. (5)

Unit-4

Q No 4 a) A)i) Differentiate between Symmetric and Asymmetric key cryptography.(3) (12)

ii) Ajay received following cipher text from Vijay. After decryption what is the original message conveyed by Vijay to Ajay? (3)

JIKSA MIBLZ QDNZA IZMIV

B) i) Identify various fields in International mobile station equipment identity?(3)

ii) Identify and Name various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

262 017 000 000 012 (3)

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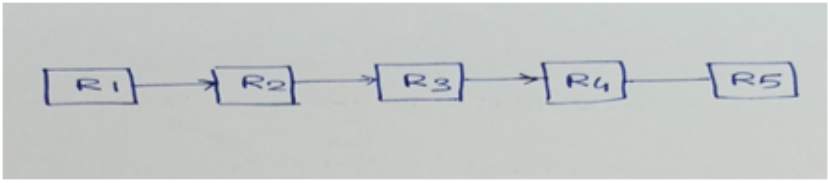
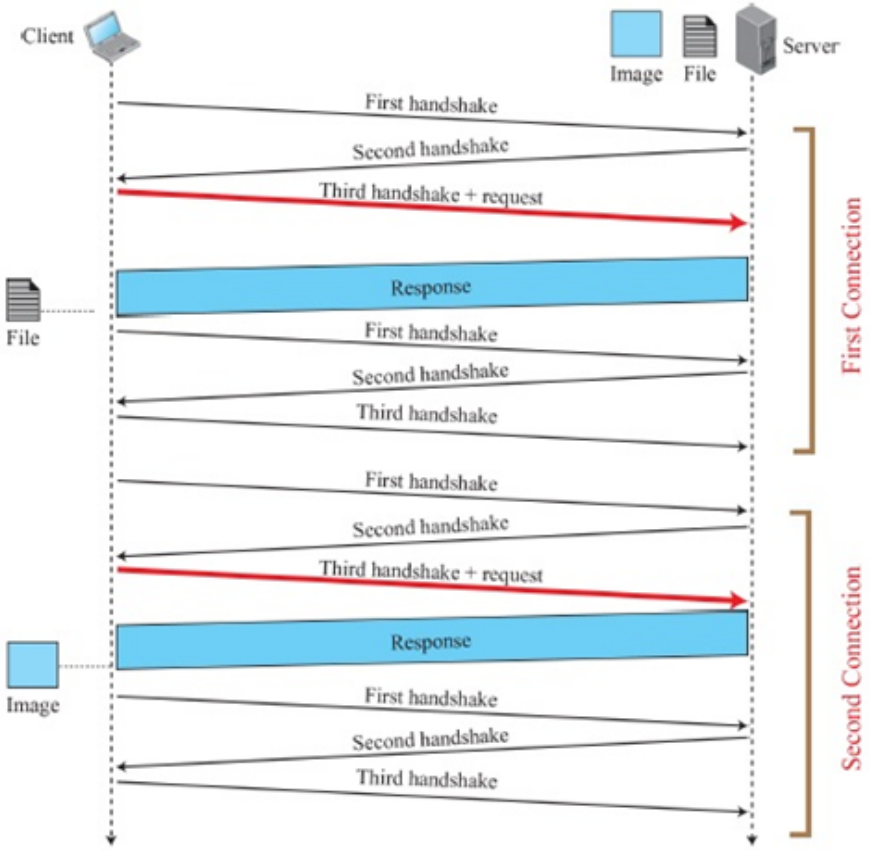
Unit-1

Q No 1 a) (11)



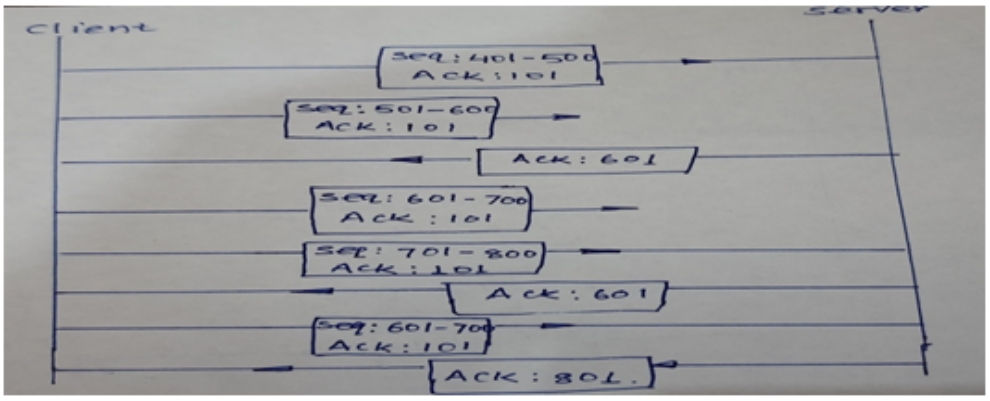
A) The above given router network uses distance vector routing algorithm, consider a situation where initially router R1 is of up first and then goes down. Analyse and discuss the packet exchange between these routers. (4)

B) A client needs to access a file with a link to another file. Recognize the HTTP communication between client and server as shown below. Identify whether there is any other way of communication for data transfer in the given diagram? If yes differentiate between them? (3)



C) Nisha Want to have more than two operating systems on her recently bought laptop. What are the techniques available to do same? Also differentiate between these techniques. (4)

Q No 2 a) A) The Diagram shows TCP Communication between client and server. Discuss the sequence of exchanges between client and server. Also identify specific events occurred, if any? (4) (12)



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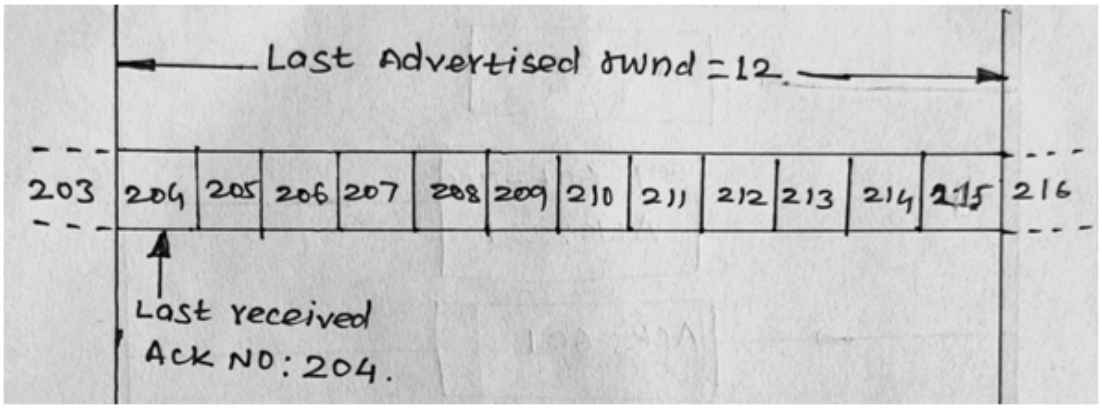

C) A Company wants to deploy LAN, The company has to make decision to use wired LAN or wireless LAN. Now company is inclined towards using wireless LAN. Identify key characteristics of wireless LAN that either do not apply to wired LAN or they do not matter much when compared? (4)

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Unit-4

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ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -
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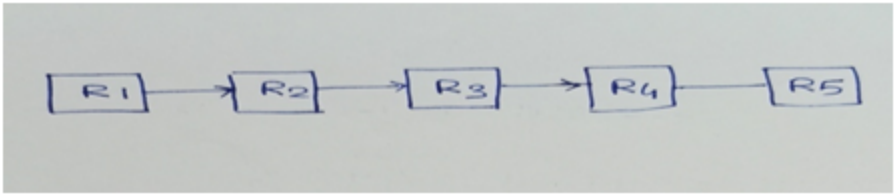
Q No 1 a) (11)



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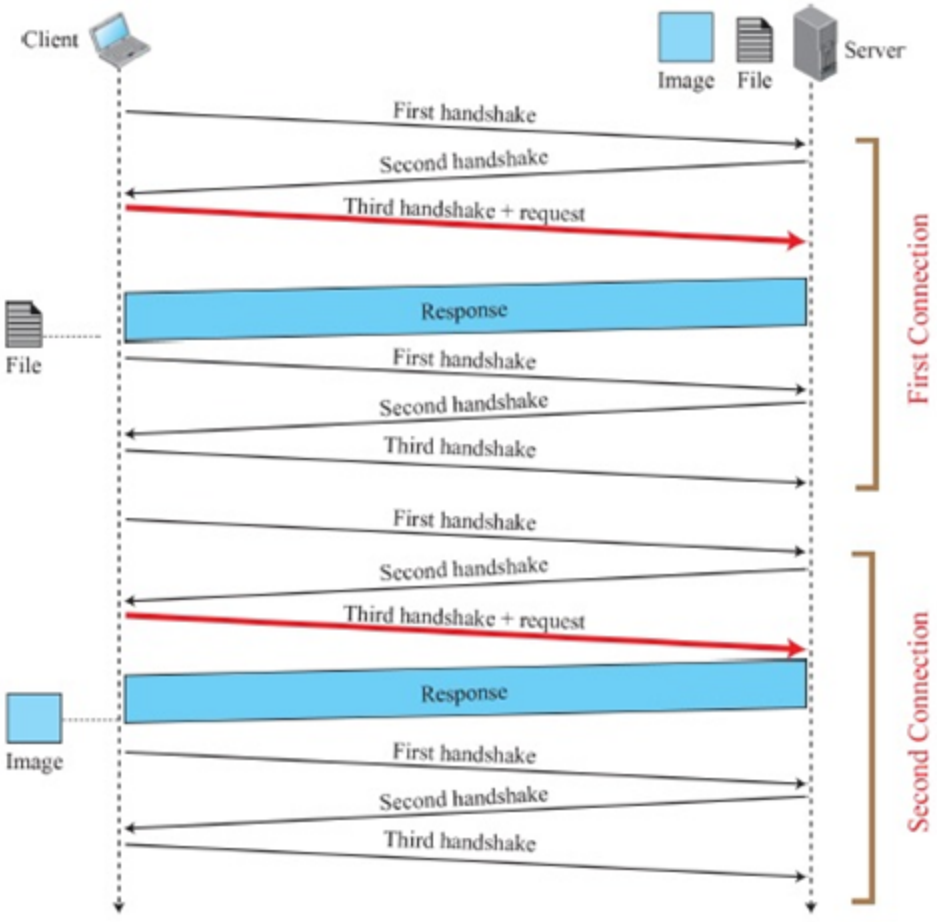

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Unit-2

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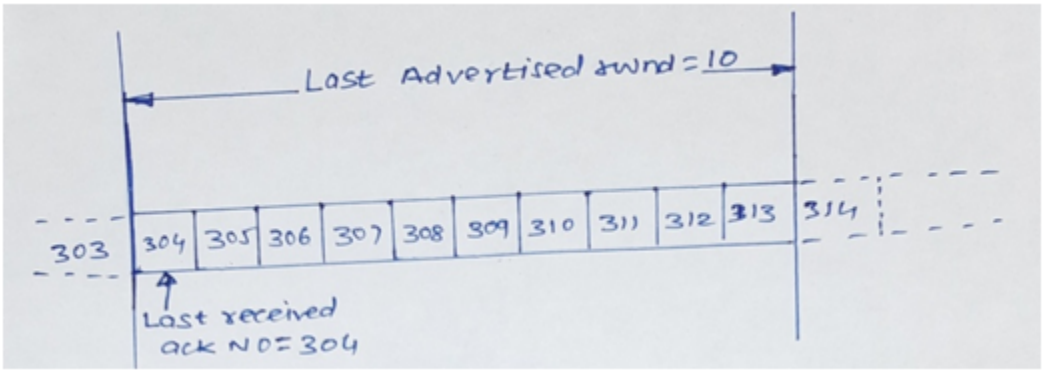
B) Figure below shows the values of last acknowledgement and rwnd at the TCP receiver. Now sender TCP has sent bytes 304 to 311. Bytes 304 to 307 are acknowledged and pulled by the application process. In such scenario, What is the new value for rwnd? Whether receiver window has shrunk? Justify (4)



C)'Fastnet' Company wants to deploy 802.11 network in their premises. The premises has three floors .The main aim is to provide concurrent internet connectivity to all employees. Whether a single access point will be sufficient to satisfy the given requirement? Justify your answer. (4)

Unit-3

Q No 3 a) A) There is need for an organization to design a network for 800 users. It is required that all user get internet connectivity. Design a suitable network? (10) (15)

The design should address the following aspects.

1.Topology Used

2.Cabling Details

3.IP addressing Scheme

4.Network Devices

5. Securing network from outside threats.

B) There are 32 smaller networks in an organization. Now organization wants to combine all these networks as one network.

a) Is this merging possible?

b) Discuss the prerequisite for this merging to happen.

c) After the merging of the networks, sometime later, organization rethinks of separating them as smaller networks again. Name the techniques to do this? (5)

Unit-4

Q No 4 a) A) i)Differentiate between Symmetric and Asymmetric key cryptography. (3) (12)

ii)Seema received following cipher text from Karishama. After decryption what is the original message conveyed by Karishama to Seema? (3)

UKOWNVCPGQWUNAURGCNKPI

B)i) Identify various fields in location area identifier (LA).Give Its Importance.(3)

ii) Identify and Name various various fields from below given IMSI number.

Given: International mobile subscriber identity number is -

208 092 000 000 117 (3)