



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : X 10320

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020 AND
APRIL/MAY 2021

Fifth/Sixth Semester

Computer Science and Engineering
CS 8591 – COMPUTER NETWORKS

(Common to : Computer and Communication Engineering/Information Technology)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. How are the subgroups of OSI model layers segregated by their functions ?
2. Differentiate Circuit-switched networks and Packet-switched networks.
3. List out the functions of the Data Link Layer.
4. Find the Hamming distance between two pair of code words :
A = 01011
B = 11110
5. Why IPv6 is preferred over IPv4 ?
6. Find the class of each address.
a) 11000001 10000011 00011011 11111111
b) 252.5.15.111
7. How congestion occurs in a network ?
8. What happens in the three way handshaking between any two devices ?
9. Define anonymous FTP.
10. What is the difference between IMAP and POP ?

X 10320

-2-



PART – B

(5×13=65 Marks)

11. a) i) What are the layers of the ISO/OSI protocol stack ? Briefly list out their functions. (10)
- ii) What is the need for another checking mechanism at the transport layer even though the data link layer is capable of detecting the errors between the hops ? (3)
- (OR)
- b) i) Compare and contrast guided and unguided media for transmission. (7)
- ii) One channel with a bit rate of 190 kbps and another with a bit rate of 180 kbps are to be multiplexed using TDM with no synchronization bits.
- 1) What is the size of a frame in bits ? (3)
- 2) What is the data rate ? (3)
12. a) i) A message that is to be transmitted is represented by the polynomial $M(x) = x^5 + x^4 + x$ with a generating prime polynomial $G(x) = x^3 + x^2 + 1$. Generate a 3 bit CRC code, $C(x)$ which is to be appended to $M(x)$. (10)
- ii) How is a hub related to a repeater ? (3)
- (OR)
- b) Explain in detail about the error and flow control mechanisms employed at data link layer. (13)
13. a) What are the different routing algorithms ? List out their pros and cons. (13)
- (OR)
- b) An ISP is given a block of addresses beginning with 190.100.0.0/16. The ISP needs to distribute these addresses to 3 groups of customers as follows :
- a) Group 1 has 64 customers each needs 256 addresses. (3)
- b) Group 2 has 128 customers each needs 128 addresses. (3)
- c) Group 3 has 128 customers each needs 64 addresses. (3)
- Design the sub-blocks and give the slash notation for each sub-block. How many addresses are still available after these allocations ? (4)
14. a) What are the two broad categories of Congestion Control mechanisms ? Briefly explain all the techniques. (13)
- (OR)
- b) Furnish the packet format of Stream Control Transmission Protocol with its fields. How are the data transferred with four way handshaking ? (13)



15. a) What is the format of an email ? Explain the architecture of a mailing system. (13)

(OR)

b) Does the SSL protocol need the services of a Certificate Authority ? Explain your answer. (13)

PART – C

(1×15=15 Marks)

16. a) i) Explain the process of web page loading of the given page :

<http://www.annauniv.edu/ug/cse/index.html>

Assume the IP address is unknown, HTTP 1.1 is used, web page is available. (7)

ii) How a stateful session on a shopping cart application at flipkart.com can be implemented by a stateless HTTP ? What will be the security vulnerability in this approach ? (8)

(OR)

b) Two hosts are in a CSMA/CD network and the medium has a data transfer capacity of 1Gbps. The minimum frame length is fixed to 1,000 bits and the propagation speed is 2×10^8 m/s.

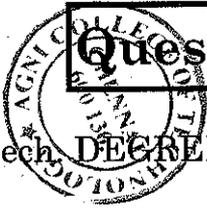
i) What will be the distance between the hosts ? (7)

ii) If it is an Ethernet network, what is the efficiency when the hosts have a maximum distance between them ? If the distance is reduced to 1 m, does it impact the efficiency ? (8)



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Question Paper Code : 90160

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth Semester
Computer Science and Engineering
CS8591 – COMPUTER NETWORKS
(Common to Information Technology)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is transmission media ? Give example.
2. Outline the need for switching.
3. Distinguish between a point-to-point link and a broadcast link.
4. Outline the use of Cyclic Redundancy Check.
5. What is DHCP ?
6. Present an outline of IPv6 addressing.
7. What is piggybacking ?
8. Outline stop-and-wait ARQ mechanism.
9. What is HTTP ?
10. Present an outline of SSH.

PART – B

(5×13=65 Marks)

11. a) Draw the ISO-OSI architecture and outline the functions performed by each layer.
(OR)
b) Describe Circuit-Switching and Packet-Switching with an example. **(13)**

Reg. No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : **57259**

31/05/2016

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Electronics and Communication Engineering

CS 6551 – COMPUTER NETWORKS

(Common to Fourth Semester – Computer Science and Engineering/ Fifth Semester – Information Technology)

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define flow control.
2. Write the parameters used to measure network performance.
3. Define hidden node problem.
4. What is Bluetooth ?
5. Expand ICMP and write the function.
6. Write the types of connecting devices in internetworking.
7. What do you mean by slow start in TCP congestion ?
8. List the different phases used in TCP connection.
9. Define URL.
10. Mention the different levels in domain name space.

PART – B (5 × 16 = 80 Marks)

11. (a) Explain any two error detection mechanism in detail. (16)
- OR**
- (b) Explain in detail about :
- (i) HDLC (8)
- (ii) PPP (8)
12. (a) Give the comparison between different wireless technologies ? Enumerate 802.11 protocol stack in detail. (16)
- OR**
- (b) Write a short on :
- (i) DHCP (8)
- (ii) ICMP (8)
13. (a) With a neat diagram explain Distance vector routing protocol. (16)
- OR**
- (b) Explain about IPV6 ? Compare IPV4 and IPV6. (16)
14. (a) Define UDP. Discuss the operations of UDP. Explain UDP checksum with one example. (16)
- OR**
- (b) Explain in detail the various TCP congestion control mechanisms. (16)
15. (a) (i) Describe how SMTP protocol is used in E-mail applications. (8)
- (ii) Explain HTTP with an example. (8)
- OR**
- (b) Explain in detail about Web service architecture. (16)

Reg. No. :

Question Paper Code : 71686

B.E./B.Tech. DEGREE EXAMINATION; APRIL/MAY 2017.

Fourth/Fifth/Sixth/Seventh/Eighth Semester

Computer Science and Engineering

CS 6551 — COMPUTER NETWORKS

(Common to Biomedical Engineering, Electronics and Communication Engineering,
Mechatronics Engineering, and Information Technology)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between packet switched and circuit switched networks.
2. What is meant by bit stuffing? Give an example.
3. State the functions of bridges.
4. When is ICMP redirect message used?
5. How do routers differentiate the incoming unicast, multicast and broadcast IP packets.
6. Why is IPV4 to IPV6 transition required?
7. List the advantages of connection oriented services over connectionless services.
8. How do fast retransmit mechanism of TCP works?
9. State the usage of conditional get in HTTP.
10. Present the information contained in a DNS resource record.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Explain the challenges faced in building a network. (10)
- (ii) Obtain the 4-bit CRC code for the data bit sequence 10011011100 using the polynomial $x^4 + x^2 + 1$. (3)

Or

- (b) (i) With a protocol graph, explain the architecture of internet. (7)
(ii) Consider a bus LAN with a number of equally spaced stations with a data rate of 9 Mbps and a bus length of 1 km. What is the mean time to send a frame of 500 bits to another station, measured from the beginning of transmission to the end of reception? Assume a propagation speed of 150 m/s. If two stations begin to monitor and transmit at the same time, how long does it need to wait before an interference is noticed? (6)

12. (a) (i) Discuss the working of CSMA/CD protocol. (6)
(ii) Explain the functions of MAC layer present in IEEE 802.11 with necessary diagrams. (7)

Or

- (b) (i) Consider sending a 3500-byte datagram that has arrived at a router R_1 that needs to be sent over a link that has an MTU size of 1000 bytes to R_2 . Then it has to traverse a link with an MTU of 600 bytes. Let the identification number of the original datagram be 465. How many fragments are delivered at the destination? Show the parameters associated with each of these fragments. (6)
(ii) Explain the working of DHCP protocol with its header format. (7)

13. (a) Explain in detail the operation of OSPF protocol by considering a suitable network. (13)

Or

- (b) Explain the working of Protocol Independent Multi-cast (PIM) in-detail. (13)

14. (a) (i) Explain the adaptive flow control and retransmission techniques used in TCP. (8)
(ii) With TCP's slow start and AIMD for congestion control, show how the window size will vary for a transmission where every 5th packet is lost. Assume an advertised window size of 50 MSS. (5)

Or

- (b) (i) Explain congestion avoidance using random early detection in transport layer with an example. (7)
(ii) Explain the differentiate services operation of QOS in detail. (6)

15. (a) (i) Describe how SMTP transfers message from one host to another with suitable illustration. (6)
(ii) Explain IMAP with its state transition diagram. (7)

Or

- (b) (i) List the elements of network management and explain the operation of SNMP protocol in detail. (8)
(ii) Discuss the functions performed by of DNS. Give example. (5)

PART C -- (1 × 15 = 15 marks)

16. (a) (i) Draw the format of TCP packet leader and explain each of its field. (10)
(ii) Specify the justification for having variable field lengths for the fields in the TCP header. (5)

Or

- (b) Illustrate the sequence of events and the respective protocols involved while accessing a web page from a machine when it is connected with internet for first time. (15)



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 40913

09/05/18
FN

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fourth/Fifth/Sixth/Seventh/Eighth Semester

Computer Science and Engineering

CS6551 – COMPUTER NETWORKS

**(Common to : Biomedical Engineering/Electronics and Communication Engineering/
Mechatronics Engineering/Information Technology)**

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Write down the requirements to build a computer network.
2. List the metrics that influence the performance of computer networks.
3. Define 802.11.
4. What do you mean by switching ?
5. What are the benefits of Open Shortest Path First (OSPF) protocol ?
6. What is multicast routing ?
7. What are the services provided by Transport layer protocol ?
8. Define congestion control.
9. Write the uses of HTTP.
10. What is DNS ?

PART – B

(5×13=65 Marks)

11. a) With a neat sketch, explain the function of OSI network architecture. **(13)**
(OR)
- b) Discuss the different ways to address the framing problem. **(13)**

Download STUCOR App for all subject Notes & QP's

40913



12. a) i) Show and explain the Ethernet frame format. (7)
ii) Highlight the characteristics of connectionless networks. (6)

(OR)

- b) i) Write an algorithm for datagram forwarding in IP. (7)
ii) Show the ARP packet format. (6)

13. a) i) Explain the function of Routing Information Protocol (RIP). (7)
ii) Draw the IPv6 packet header format. (6)

(OR)

- b) i) Explain the operation of Protocol-Independent Multicast (PIM). (7)
ii) Outline the need of Distance Vector Multicast Routing Protocol (DVMRP). (6)

14. a) i) Explain how TCP manages a byte stream. (7)
ii) Identify and explain the states involved in TCP. (6)

(OR)

- b) i) Explain any one TCP congestion avoidance mechanism. (7)
ii) Brief about the approaches used to provide QoS support. (6)

15. a) Discuss the working of Email in detail. (13)
(OR)

- b) i) Tabulate the various HTTP request operations. (7)
ii) Draw the IMAP state transition diagram. (6)

PART - C

(1×15=15 Marks)

16. a) Analyse various error detection techniques in transmission of data. (15)
(OR)

- b) Elaborate on TCP congestion control mechanisms. Differentiate these mechanisms. (15)

Download STUCOR App for all subject Notes & QP's

7. How does UDP address flow control mechanism?
8. State the purpose of service model.
9. Draw the scenario of Electronics mail.
10. Draw a diagram that illustrate tunneling strategy.

PART B — (5 × 13 = 65 marks)

11. (a) Explain with relevant diagram the functions of physical and data link layer.
Or
(b) Discuss your understanding of Bit Oriented Protocol namely HDLC.
12. (a) Outline the working principle of Bluetooth technology.
Or
(b) Explain the architecture of IEEE 802.11 Wireless LAN.
13. (a) With an example network scenario explain the mechanism of Routing Information Protocol and specify the routing table contents.
Or
(b) Discuss the fundamentals and advantages of open shortest path first protocol.
14. (a) Explain the congestion control techniques used to improve QOS of the computer network.
Or
(b) (i) Explain the operation of Go-Back-N protocol. (6)
(ii) With a diagram explain about TCP connection management. (7)
15. (a) Discuss in detail about HTTP operation.
Or
(b) Write your understanding on File Transfer Protocol.

PART C — (1 × 15 = 15 marks)

16. (a) Consider a network scenario and explain the functions of ARP and RARP protocols with frame formats.
Or
(b) Explain the basics of POP3 and IMAP mail access protocols.



12. a) Explain the functions of Wi-Fi and Bluetooth in detail. (13)
(OR)
- b) i) Explain the datagram forwarding in IP. (7)
ii) Show and explain the ARP packet format for mapping IP addresses into Ethernet addresses. (6)
13. a) With an example, explain the function of link state routing protocol. (13)
(OR)
- b) Elaborate on multicast routing protocols. (13)
14. a) i) Draw a TCP state transition diagram for connection management. (7)
ii) Brief about approaches used for TCP congestion control. (6)
(OR)
- b) Write a detailed note on congestion avoidance mechanisms used in TCP. (13)
15. a) i) Explain the function of Internet Message Access Protocol (IMAP) with a state diagram. (8)
ii) List and explain the various HTTP request operations. (5)
(OR)
- b) i) What is Domain Name System (DNS) ? Explain. (8)
ii) Brief about the importance of Simple Network Management Protocol (SNMP). (5)

PART – C

(1×15=15 Marks)

16. a) Outline the steps involved in building a computer network. Give the detailed description for each step. (15)
(OR)
- b) For the network given in Figure 1, give global distance – vector tables when
- i) Each node knows only the distances to its immediate neighbors. (5)
 - ii) Each node has reported the information it had in the preceding step to its immediate neighbors. (5)
 - iii) Step (ii) happens a second time. (5)

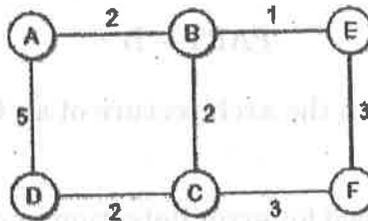


Figure 1

27/11/18

(FN)

15. (a) Explain in detail how electronic mail application is carried out in a network. Also explain the protocols used in this application. (13)

Or

- (b) Briefly explain the Domain Name Service protocol with an example. (13)

PART C — (1 × 15 = 15 marks)

16. (a) A student attaches a laptop to campus network and requests/receives a web page from www.google.com. Explain the sequence of operations carried out with the help of different protocols used in application, transport, network and link layers. (15)

Or

- (b) (i) How error correction is handled at different layers in an IP network? (9)
(ii) If IP provides connectionless service. How TCP supports connection-oriented service? (6)

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 20371

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Fourth/Fifth/Sixth/Seventh/Eighth Semester

Computer Science and Engineering

CS 6551 – COMPUTER NETWORKS

(Common to Electronics and Communication Engineering, Mechatronics Engineering, Information Technology, Biomedical Engineering)

(Regulations 2013)

(Also Common to PTCS 6551 – Computer Networks for B.E. (Part-Time) Third Semester – Computer Science and Engineering – Regulations 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Which layer implements the node to node channel connection in OSI layered architecture?
2. Suppose the following sequence of bits arrives over a link:
11010111110101111001011110110. Show the resulting frame after any stuffed bits have been removed. Indicate any errors that might have been introduced into the frame.
3. Suppose you are designing a sliding window protocol for a 1.5 Mbps point-to-point link, which has one way latency of 1.5 seconds. Assuming each frame carries 10 KB of data, what is the minimum number of bits required for the sequence number if SWS = RWS?
4. What details are provided by DHCP other than IP address?
5. List the two factors that affect the performance of a network switch.
6. Check whether the following IPv6 address notations are correct?
(a) ::0F53:6382:AB00:67DB:BB27:7332
(b) 7803:42F2:::88EC:D4BA:B75D:11CD

7. Suppose TCP operates over 10-Gbps link. Assuming TCP could utilize the full bandwidth continuously, how long would it take the sequence numbers to wrap around completely? Is the sequence number space adequate?
8. Define QoS.
9. Consider an HTTP client that wants to retrieve a Web document at a given URL. The IP address of the HTTP server is initially unknown. What transport and application-layer protocols are needed in this scenario?
10. What is the use of SNMP protocol in a network?

PART B — (5 × 13 = 65 marks)

11. (a) (i) List the requirements in building a computer network. (5)
- (ii) Suppose a 128-kbps point-to-point link is set up between the Earth and a rover on Mars. The distance from the Earth to Mars (when they are closest together) is approximately 55 Giga meters, and data travels over the link at the speed of light at 3×10^8 m/s.
 - (1) Calculate the minimum RTT for the link.
 - (2) Calculate the delay-bandwidth product for the link.
 - (3) A camera on the rover takes pictures of its surroundings and sends these to Earth. How quickly after a picture is taken can it reach Mission Control on Earth? Assume that each image is 5 Mb in size. (8)

Or

- (b) (i) Suppose we want to transmit the message, 1011 0010 0111 and protect it from errors using the CRC polynomial $x^4 + x^2 + 1$. Use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred? (5)
 - (ii) Explain the algorithm used for reliable transmission and flow control. (8)
12. (a) (i) Explain the media access control algorithm, CSMA/CD used in Ethernet. Why the same algorithm cannot be used in wireless LAN? (8)
 - (ii) Consider sending a 2400-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 422. How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation. (5)

Or

- (b) (i) Explain the error reporting using ICMP protocol. How does Traceroute program makes use of ICMP to determine the name and addresses of the routers between source and destination? (7)
- (ii) Suppose all of the interfaces in each of three subnets are required to have the prefix 223.1.17/24. Also suppose that Subnet 1 is required to support at least 60 interfaces, Subnet 2 is to support at least 90 interfaces, and Subnet 3 is to support at least 12 interfaces. Provide three network addresses that satisfy these constraints. (6)

13. (a) (i) Explain the link-state algorithm in detail. (5)
- (ii) Consider the network shown in Fig 1. Compute the shortest path from C to all other nodes using link-state algorithm. Also update the forwarding table of node C. (8)

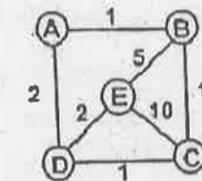


Fig. 1

Or

- (b) (i) Briefly explain the Border Gateway Protocol used for Inter domain routing in internetwork. (8)
 - (ii) Explain multicast routing protocol DVMRP. (5)
14. (a) (i) Explain three ways of connection termination in TCP using state transition diagram. (8)
 - (ii) Suppose you are hired to design a reliable byte-stream protocol that uses a sliding window (like TCP). This protocol will run over a 50-Mbps network. The RTT of the network is 80 ms, and the maximum segment lifetime is 60 seconds. How many bits would you include in the AdvertisedWindow and SequenceNum fields of your protocol header? (5)

Or

- (b) (i) Explain the original, Karn/Patridge and Jacobson/Karel's algorithms of adaptive retransmission in TCP. (8)
- (ii) Consider a RED gateway with $MaxP = 0.02$, and with an average queue length halfway between the two thresholds. Find the drop probability P_{count} for count = 1 and count = 50. Also calculate the probability that none of the first 75 packets is dropped. (5)



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 91401

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Fifth Semester

Computer Science and Engineering

CS6501 – INTERNET PROGRAMMING

(Regulations 2013)

(Common to PTCS6501 – Internet Programming for B.E. (Part-Time) Fourth Semester – Computer Science and Engineering – Regulations 2014)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Give the syntax to create and initialize an array in Java. Write a Java program to find an element position in integer array.
2. State the ways in which string comparison can be implemented in Java.
3. What is meant by a web server ? Give two examples.
4. Mention any four advantages of CSS.
5. List any four methods of the Java Script Date object.
6. State four advantages of JSP over Java Servlets.
7. Why PHP is called a loosely typed language ?
8. Define XML namespace.
9. What is AJAX call back function ?
10. State the types of webservice.

PART – B

(5×13=65 Marks)

11. a) i) Explain about exception handling in java with an example. (6)
ii) Explain about Java inner class with an example. (7)
- (OR)
- b) i) Explain about multithreading in Java. (7)
ii) List the four methods provided by the String Class for replacing found characters or substrings. (6)

Download STUCOR App for all subject Notes & QP's

91401



12. a) i) Define Rich Internet Application. With a neat diagram show the components in the implementation of a rich internet application. (7)
ii) State the uses of HTML. Write an HTML code to create a table. (6)
(OR)
- b) i) Mention the rules to be followed in writing a XHTML code. (6)
ii) Give an example of a CSS style rule. Write code to illustrate the use of embedded style sheet. (7)
13. a) i) Explain the role of document object model in enabling the creation of dynamic web pages using Javascript. (7)
ii) Write a java script to handle mouse events. (6)
(OR)
- b) i) Explain the life cycle of a JSP page with a neat diagram. (7)
ii) List the types of JSTL tags and explain the JSTL SQL tags in detail. (6)
14. a) i) Write a PHP code to create an array and sort it using built in functions. (5)
ii) Write a PHP code to read from a cookie and display its contents. (8)
(OR)
- b) i) Explain in detail the XML event oriented parsing technique. (6)
ii) Explain the process of XSL transformation and list the advantages of XSLT. (7)
15. a) i) List the steps involved in the AJAX operation and explain them in detail. (7)
ii) Explain the XMLHttpRequest object and its methods in detail. (6)
(OR)
- b) State the components of a web service and explain the steps in the creation of a java web service in detail. (13)

PART – C

(1×15=15 Marks)

16. a) i) Write code to create a html page to get numeric input and e-mail ID from user. Validate the input using JSP code. (8)
ii) Explain implicit objects of JSP in detail. (7)
(OR)
- b) Write a program to connect a servlet application with a database table and display the contents of the table. Provide functionalities of adding, deleting and searching the table with appropriate code segments. (15)