

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Course: Data Communication and Computer Networks

Program: B.Tech. (CSE, IBM All Branches)

Course Code: CSEG 2009

Semester: IV

Time 03 hrs.

Max. Marks: 100

Instructions:

1. Section A - 20 marks (Attempt All 5 Questions in this Section. Each question carries 4 marks)

2. Section B - 40 marks (Attempt All 4 questions. Each question carries 10 marks)

3. Section C - 40 marks (Attempt All 2 question. Each question carries 10 marks)

SECTION A

S. No.		Marks	CO
Q 1	Enlist the scenarios where unguided communication media are preferred over guided media. Explain TWO advantages and TWO disadvantages of coaxial cable for communication.	2+2	CO1
Q 2	Differentiate the two protocols at transport layer TCP and UDP on various parameters.	4	CO5
Q 3	Compare and contrast various switching techniques?	4	CO2
Q 4	Describe the significance of error detection and error correction mechanisms employed at data link layer. Enlist different mechanisms under both categories.	1+1+2	CO3
Q 5	As you are an administrator of a network company, you are allotted a network address 192.10.1.0. There are 3 Departments Sales with 110 users, Purchase with 55 users and Management with 12 users. You need to create subnets for all these departments. Allocate valid IP addresses to all users.	4	CO4

SECTION B

Q 6	Explain IPV-4 header format with suitable diagram, explicitly explaining all the fields and their relevance.	10	CO4
Q 7	a) Why routing is important in communication and which layer is responsible for routing in OSI model? With a suitable example explain Link State Routing algorithm. ---OR--- b) Discuss the disadvantages of Distance Vector Routing algorithm. Consider the given topology (Fig. a) and the vectors received by router J from its neighbors. Based on this information calculate the new routing table of J. Show the detailed calculations.	4+6	CO4

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**End Semester Examination, May 2019****Course: Data Communication and Computer Networks****Program: B.Tech. (CSE, IBM All Branches)****Course Code: CSEG 2009****Semester: IV****Time 03 hrs.****Max. Marks: 100****Instructions:**

- 1. Section A - 20 marks (Attempt All 5 Questions in this Section. Each question carries 4 marks)**
- 2. Section B - 40 marks (Attempt All 4 questions. Each question carries 10 marks)**
- 3. Section C - 40 marks (Attempt All 2 question. Each question carries 10 marks)**

SECTION A

S. No.		Marks	CO
Q 1	We need to send 265 kbps over a noiseless channel with a bandwidth of 20 kHz. How many signal levels do we need?	4	CO1
Q 2	Give the format for UDP datagram and explain each field with function.	4	CO5
Q 3	Draw OSI layer architecture of computer networks. Place following concepts into correct layers of ISO-OSI reference model and justify your answer: a) Forming a modem connection b) Responsibility of delivery between adjacent nodes c) Reliable process to process data transportation	4	CO2
Q 4	To share the same communication media among various users is termed as channel allocation problem. Which layer in the architecture of networks is responsible for this function? Classify various channel allocation schemes with brief of each of them.	4	CO3
Q 5	What is the problem of synchronization in communication? Draw Manchester and Differential Manchester Encoding of the bit stream 110100011001	4	CO3

SECTION B

Q 6	What is multiplexing? Explain its types and advantages in communication.	10	CO5
Q 7	Explain inter-networking connecting devices in reference to OSI layers. ---OR--- Explains the drawbacks of distance vector routing scheme. Consider the given topology (Fig. a) and the vectors received by router J from its neighbors. Based on this information calculate the new routing table of J. Show the detailed calculations.	10	CO4

Name:

Enrollment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Data Communication & Computer Networks
Program: B.Tech-CSE+MAD
Course Code: CSEG 2009

Semester: IV
Time: 03 hrs.
Max. Marks: 100

Instructions: Attempt all the questions.

SECTION A

S.No.		Marks
Q 1	List down the factors which determine whether a communication system is a LAN or a WAN.	5
Q 2	How do the layers of TCP/IP protocol suite correlate to that of OSI model?	5
Q 3	State the difference between the byte-stuffing and bit-stuffing. Which one of these two is more popular?	5
Q 4	State the difference between classful and classless addressing in IPv4.	5
Q 5	Discriminate between the direct and indirect delivery of packets.	5
Q 6	Compute the value of receiver window for a host named 'Abhigyan' if the receiver, a host named 'Shivam' has a buffer size of 10000 bytes and 2500 bytes of received an unprocessed data.	5

SECTION B

Q 7	. Attempt both the parts. a) A network that employs CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time is 256×10^{-7} sec, what is the minimum size of frame? b) Explain why collision is an issue in a random access protocol but not in controlled access protocol and channelization protocol.	10
Q 8	Provide at least one address for each of the category mentioned below: a) Unicast MAC address b) Multicast MAC address c) Multicast IPv4 address (Assume any class of your choice) d) Broadcast IPv4 address (Assume any class of your choice) e) Well Known Port Address	10
Q 9	Compute the transmittable codeword for a dataword 110110101010 by a system a) which has implemented Hamming Code for Error Detection b) which has implemented Checksum scheme for Error Detection with block sizes of 4-bits	10

Q 10	Compare the TCP header and the UDP header by listing the fields in the TCP header that are missing from UDP header. Give the reasons for their absence	10
Q 11	<p>Attempt both the parts.</p> <p>a) State an advantage of a hierarchical name space over a flat name space for a system with the scale of Internet.</p> <p>b) Which domain is used by your system/institution, generic or country?</p>	10
SECTION-C		
Q 12	<p>Let you be the network administrator in a company. Assume that you are given a block of addresses starting with 196.186.24.128/25 and the company wants you to distribute the address blocks to 5 departments with each receiving at least 10 addresses. Determine the followings:</p> <p>a) Network address for each department</p> <p>b) range of valid addresses for each department</p>	20

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**End Semester Examination, May 2022****Course: Data Communication & Computer Networks****Program: B. Tech CSE (All Specializations)****Course Code: CSEG 2009****Semester: IV****Time: 03 hrs.****Max. Marks: 100****SECTION A**


S. No.		Marks	CO
Q 1	Determine the total number of links needed for an N node connected as mesh topology, star topology, ring topology, and bus topology.	4	CO1
Q 2	If the data link layer can detect errors between hops, why do you think we need another checking mechanism at the transport layer?	4	CO4
Q 3	Compare space-division and time-division switches.	4	CO1
Q 4	What is the propagation time if the distance between the two points is 12,000 km? Assume the propagation speed to be 2.4×10^8 m/s in the cable.	4	CO1
Q 5	List four differences between distance vector routing and link-state routing.	4	CO3

SECTION B

Q 6	Explain the following terms in the Go-Back-N ARQ protocol using a flow diagram: a) Sequence Numbers b) Sender's and Receiver's window size c) Timers d) Acknowledgement	10	CO2
Q 7	Compare and contrast CSMA/CD with CSMA/CA.	10	CO2
Q 8	Explain the OSI layer in detail with a suitable diagram with the functions of each layer.	10	CO1
Q 9	A 12-bit Hamming code whose hexadecimal value is 0xE4F arrives at a receiver. What was the original value in hexadecimal? Assume that not more than 1 bit is in error. OR Given the data word 1010011110 and the divisor 10111, a) Show the generation of the codeword at the sender site (using binary division). b) Show the checking of the codeword at the receiver site (assume no error).	10	CO2

SECTION-C

Q 10	We have a big single network having IP Address 200.1.2.0/24. We want to do subnetting and divide this network into 4 subnets. Identify the following: a) IP Address of each subnets, b) Total number of IP Addresses in each subnet, c) Total number of hosts that can be configured in each subnet, d) Range of IP Addresses in each subnet, e) Broadcast Address in each subnet.	20	CO3
Q 11	Write short notes on:		CO4

Name: Enrolment No:			
<p style="text-align: center;">UPES End Semester Examination, May 2023</p> <p> Course: Data Communication and Computer Networks Program: B.Tech CSE Course Code: CSEG 2009 </p> <p style="text-align: right;"> Semester: IV Time: 03 hrs. Max. Marks: 100 </p> <p>Instructions:</p>			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	If the data link layer can detect errors between hops, why do you think we need another checking mechanism at the transport layer?	4	CO1
Q 2	Consider the same noiseless channel transmitting a signal with four signal levels (for each level, we send 2 bits). Calculate the maximum bit rate.	4	CO1
Q 3	Suppose a computer sends a packet at the network layer to another computer somewhere in the Internet. The logical destination address of the packet is corrupted. What happens to the packet? How can the source computer be informed of the situation?	4	CO2
Q 4	What is the congestion control mechanism in TCP? Explain with a suitable diagram.	4	CO4
Q 5	Explain the concept and need for supernet in the network with example.	4	CO3
SECTION B (4Qx10M= 40 Marks)			
Q 6	Consider the given topology (Fig. a) and the vectors received by router J from its neighbors. Based on this information calculate the new routing table of J. Show the detailed calculations.	10	CO3

	<p>The following is part of a TCP header dump (contents) in hexadecimal format.</p> <p>E293 0017 00000001 00000000 5002 07FF</p> <ol style="list-style-type: none"> What is the source port number? What is the sequence number? What is the acknowledgment number? What is the length of the header? What is the window size? 		
--	--	--	--