P P SAVANI UNIVERSITY

Second Semester of M.Sc.(CS) Examination

May-June 2020

SSCS7040 Data Communication and Networking

11.06.2020, Thursday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section-I and Section-II should be written in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1	Answer the following.	**[05]**
(i)	TCP/IP has _____ layers.	
(ii)	When we are listening on radio, type pf transmission is: a) Simplex b) Half Duplex c) Full Duplex d) None of Above	
(iii)	What is Protocol?	
(iv)	Apply the Bit Stuffing: 01111100111001	
(v)	Assume 5 devices are arranged in mesh topology, how many cables are needed?	
Q - 2 (a)	Enlist the different types of topology and explain any three	**[05]**
Q - 2 (b)	Differentiate between LAN, WAN and MAN.	**[05]**
	OR	
Q - 2 (a)	List out various layers in TCP/IP model. Match the following to one or more layers of the TCP/IP model: a. route determination b. connection to transmission media c. providing services for the end user d. process to process delivery e. responsibility for handling frames between adjacent nodes	**[05]**
Q - 2 (b)	Define the following terms: Amplitude, Frequency, Phase, Bandwidth, Bit Rate.	**[05]**
Q - 3 (a)	Define multiplexing. Explain various multiplexing techniques in detail.	**[05]**
Q - 3 (b)	Generate the CRC for Data Word: 1001 and divisor 1011. How receiver will check the CRC?	**[05]**
	OR	
Q -3 (a)	Explain the three types of transmission impairment	**[05]**
Q - 3 (b)	The bandwidth of a channel is 4 MHz and its signal to noise ratio is 63. Calculate the appropriate bit rate and signal level. (Use Nyquist theorem and Shannon capacity).	**[05]**
Q – 4	What is the need of Medium Access Sublayer? Categorize the various Multiple Access Protocols.	**[05]**

SECTION – II

Q - 1	Answer the following.	**[05]**
(i)	What is the size of IP address?	
(ii)	Why the given IP address is not valid? 192.16.300.14	
(iii)	SMTP stands for_____	
(iv)	Find the class of address: 11000001 10000011 00011011 11111111.	
(v)	Example of user agents for e-mail is a) Microsoft Outlook b) Apple Mail c)Firefox d) None of the above	
Q - 2 (a)	Explain the various types of classes used in classful addressing scheme of network layer.	**[05]**
Q - 2 (b)	A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/25. What is the first address in the block? What is the last address in the block? What are the total number of addresses in the block?	**[05]**

OR

Q - 2 (a)	Explain the various persistence methods used in CSMA.	**[05]**
Q - 2 (b)	A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/25. What is the first address in the block? What is the last address in the block? What are the total number of addresses in the block?	**[05]**
Q - 3 (a)	Explain TCP Connection establishment using three way handshaking methods.	**[05]**
Q - 3 (b)	Differentiate between recursive resolution and iterative resolution used in DNS.	**[05]**

OR

Q - 3 (a)	What are the responsibilities of Transport layer? Explain in brief.	**[05]**
Q - 3 (b)	The following is the content of a UDP header in the hexadecimal format:	**[05]**

CB84000D001C001C

a. What is the source port number?
b. What is the destination port number?
c. What is the length of the user datagram?
d. What is the length of the data?
e. Is the packet directed from a client to a server or vice versa?

Q - 4	Write a short note on HTTP.	**[05]**

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