P P SAVANI UNIVERSITY

Third Semester of B.Sc.IT. Examination

December 2022

SSIT2010: Computer Network

26.11.2022, Saturday **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 II must be attempted 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[Any 5]**	**[05]**	**CO**	**BTL**
(i)	Define Computer Network.		**1**	**1**
(ii)	Which layers are network support layers?		**1**	**1**
(iii)	What are the responsibilities of Data Link Layer?		**1**	**1**
(iv)	What are the types of errors?		**1**	**1**
(v)	Five channels, each with a 100-kHz bandwidth, are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard b and of 10 kHz between the channels to prevent interference?		**1**	**4**
(vi)	What are the categories of Transmission media?		**3**	**1**
(vii)	What is Fixed Size Framing?		**3**	**1**
Q - 2 (a)	Explain functionality of Repeater, Hub, Bridge, Switch, Router and Gateway.	**[05]**	**1**	**2**
Q - 2 (b)	Draw and Explain OSI reference model in detail.	**[05]**	**1**	**3**
	OR			
Q - 2 (a)	Explain Physical Address, IP address, Port Address in brief.	**[05]**	**1**	
Q - 2 (b)	Draw and Explain TCP/IP model in detail.	**[05]**	**2**	**4**
Q - 3 (a)	A Bit steam 100100 is to be transmitted using standard CRC method with divisor value x3+x2+1. Generate the CRC code word.	**[05]**	**3**	**4**
Q - 3 (b)	What do you mean by random access protocols? Explain slotted ALOHA in brief.	**[05]**	**1**	**2**
	OR			
Q - 3 (a)	Generate the CRC code for the data word of 1 1 0 0 1 0 1 0 1. The divisor is 1 0 1 0 1.	**[05]**	**1**	**4**
Q - 3 (b)	What is topology? Explain topology in detail.	**[05]**	**1**	**2**
Q - 4	Answer the following question	**[05]**		
(i)	Suppose the data is to be transmitted is 1010, the bits will be placed as follow		**1**	**4**

7	6	5	4	3	2	1
1	0	1	R4	0	R2	R1

- Calculate the value of R1, R2, R4

• How the receiver will detect and correct if 4th bit is changed from 0 to 1?

SECTION – II

Q - 1	MCQ/Short Question/Fill in the Blanks (Any Five)	**[05]**		
(i)	The default connection type used by HTTP is _____.		**2**	**1**
	a) Persistent **b)** non-Persistent **c)** Primary **d)** None of the mentioned			
(ii)	In an IPv4 packet, the value of HLEN is 0110 in binary. How many bytes of options are being Carried by this packet?		**1**	**2**
(iii)	What is port no of HTTP?		**3**	**1**
(iv)	Suppose a TCP connection is transferring a file of 3000 bytes. The first byte is numbered 10,001. What are the sequence numbers for each segment if data are sent in three segments, each carrying 1000 bytes?		**2**	**2**
(v)	What is FTP?		**1**	**1**
(vi)	Find the error, if any, in the 75.45.65.754 IPv4 address		**1**	**1**
(vii)	Transport layer protocols deals with **a)** application to application communication **b)** process to process communication **c)** node to node communication **d)** none of the mentioned		**2**	**1**
Q - 2 (a)	Explain IPv4 Datagram Format.	**[05]**	**1**	**4**
Q - 2 (b)	Explain the concepts of subnetting and super netting for IP address.	**[05]**	**1**	**1**
	OR			
Q - 2 (a)	What is UDP? Briefly explain UDP with operations.	**[05]**	**2**	**4**
Q - 2 (b)	Compare UDP and TCP.	**[05]**	**2**	**5**
Q - 3 (a)	Explain in detail Random access protocol.	**[05]**	**3**	**2**
Q - 3 (b)	Explain TCP congestion control mechanism in detail.	**[05]**	**2**	**3**
	OR			
Q - 3 (a)	Explain in detail Random access protocol.	**[05]**	**1**	**2**
Q - 3 (b)	Explain TCP Connection establishment using three-way handshaking methods.	**[05]**	**2**	**3**
Q - 4	Attempt any one	**[05]**		
(i)	Write a short note on HTTP.		**3**	**1**
(ii)	Briefly explain DNS.		**3**	**2**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create