Department of Information Technology, MIT campus, Anna university

B.Tech – Information Technology Assessment I Oct '2021

IT 5551 Computer Networks

90 Minutes : 50 Marks

CO1: Highlight the significance of the functions of each layer in the network.
CO2: Identify the devices and protocols to design a network and implement it.
CO3: Build network applications using the right set of protocols and estimate their performances.
CO4: Trace packet flows and interpret packet formats.
CO5: Apply addressing principles such as subnetting and VLSM for efficient routing.
CO6: Explain media access and communication techniques.

Part A 5 X 2 =10 (Answer all)				
		Marks	**CO**	**BL**
1.	IEEE 802.3 is not suitable for client server application because, Ethernet, there is a restriction on minimum size. – justify your answer	2	CO6	L2
2.	What does a HTTP caching proxy do if it has a cache miss and how many TCP connections does it establish for a specific request (1 object)?	2	CO3	L
3.	Distinguish circuit switching and packet switching.	2	CO2	L1
4.	How sequence number and ACK numbers are computed in TCP.	2	CO4	L2
5.	Compare and contrast connectionless and connection-oriented transport layer services.	2	CO1	L1
PART B 2 X 13 = 26 (Answer all)				
6.	a) Suppose you, with a e-mail account in mitindia.edu, send a message to your friend's e-mail account in gmail. Which are SMTP client and SMTP server? Describe how the connection is established between them. Also write down the transcript of messages exchanged between them. Also list what other application layer protocols involved in this application.	10	CO3	L6
6	b) What are the fields in pseudoheader used in UDP checksum? What is the use of including seudoheader in checksum?	03	CO3	L2
7	a) You are hired to design a reliable byte-stream protocol that uses a sliding window (like TCP). This protocol will run over a 100-Mbps network. The RTT of the network is 100 ms, and the maximum segment lifetime	08	CO6	L5

	is 70 seconds. How many bits would you include in the AdvertisedWindow and SequenceNum fields of your protocol header?			
7	b) Differentiate client server and peer to peer architecture with a topology representation.	05	CO2	L2
PART C 1x 14= 14 (Answer all)				
		Marks	CO	BL
8	(i) The following is a dump of a UDP header in hexadecimal format. **0045DF000058FE20** a. What is the source port number? b. What is the destination port number? c. What is the total 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? f. What is the client process.	06	CO4	L5
	(ii) Explain the 3 way and 4 way handshake protocols in TCP with the interaction diagram.	08	CO2	L3