BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH   SEMESTER : VI
BRANCH: ECE   SESSION: SP/2024

SUBJECT: EC351 COMPUTER NETWORKING

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions, each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL

Q.1(a)	Compare the following in tabular form
	    I) 10 BASE 5 and 10 BASE 2 configurations of traditional Ethernet
	    II) FDDI and IEEE 802.5 Token Ring
		[5]	1	2

Q.1(b)	Explain the following
	    i) the problem caused by a 'closed loop' in routing and its solution with the help of an example.
	    ii) Different types of two-layer switches with their merits and demerits.
		[5]	1	2

Q.2(a)	List the limitations of Intserv architecture (ISA). How does Differentiated services (DS) overcome them? Differentiate among FIFO, Fair, and Weighted fair queuing disciplines used at the routers implementing ISA.	[5]	2	1
Q.2(b)	State the motivation behind the implementation of IPv6 over IPv4. A transport layer message consisting of 1500 bits of data and 160 bits of header is sent to an internet layer, which appends another 160 bits of header. This is then transmitted through two networks using a 24-bit packet header. The destination network has a maximum packet size of 800 bits. How many bits, including headers, are delivered to the network-layer protocol at the destination?	[5]	2	1, 3
Q.3(a)	Describe the credit-based flow control technique used for an unreliable network with the help of an example. What is the maximum data rate per connection in a network with a maximum packet size of 128 bytes, a maximum packet lifetime of 30 seconds, and an 8-bit sequence number?	[5]	3	2,3

Q.3(b)	Examine the congestion control mechanism affected in TCP using the retransmission timer management and window management? Write down the eventualities in the following scenarios:
	    i) If a fixed value for the retransmission timer is used.
	    ii) If a slow start mechanism for window management is not used.
		[5]	3	2,3

Q.4(a)	Differentiate between encryption, authentication, and digital signature. What crucial aspects must be verified to conclude a message is authentic?	[5]	4	2

Q.4(b)	Discuss the following
	    i) E-mail security
	    ii) Properties of a strong Hash function with suitable explanation
		[5]	4	2

Q.5(a)	What is SNMP? Where is it used? What are the three types of parties? Briefly explain the following key elements in a network management system.
	    i) Manager, ii) Agent,
	    iii) Management Information Base, iv) Network management protocol.
		[5]	5	2

Q.5(b)	Differentiate the following
	    i) Static, dynamic, and active web documents
	    ii) Simple mail transfer protocol (SMTP) and Multipurpose internet mail extension (MIME)
		[5]	5	2

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