CBCS SCHEME

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18CS52

Fifth Semester B.E. Degree Examination, July/August 2022
Computer Networks and Security

Time: 3 hrs. Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the steps involved in transferring a web page from server to client in case of HTTP with non – persistent connection. Also brief the Back of the Envelope calculation for time needed to request and receive the file. **(10 Marks)**

b. Consider an e – commerce site that wants to keep a purchase record for each of its customers. Describe with neat diagram how this can be done with cookies. **(10 Marks)**

OR

2 a. Explain with neat diagram, the socket related activity of client – server communication over the TCP along with client and server code. **(10 Marks)**

b. Explain FTP with its Commands and Replies. **(10 Marks)**

Module-2

3 a. Describe the various fields of UDP segment structure. Suppose you have the following three 16 – bit words 0110011001100000 , 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 , 1000111100001100. Find the checksum. How does the receiver detect errors? Is it possible that 1 – bit errors will go undetected? **(10 Marks)**

b. Explain Sender and Receiver side Finite State Machine (FSM) representation for rdt 2.1 protocol. **(10 Marks)**

OR

4 a. Draw TCP Segment structure. Describe the various fields of TCP segment structure. **(10 Marks)**

b. Explain with neat diagram, the causes and costs of congestion considering the following scenarios.
Scenario 1 : Two sender , A Router , with Infinite Buffer.
Scenario 2 : Two sender , A Router , with Finite Buffer. **(10 Marks)**

Module-3

5 a. Write Link state Routing Algorithm. Apply it to the following graph [Refer Fig. Q5(a)] with source node as "U". Draw the least cost path tree and the forwarding table for node "U". **(10 Marks)**

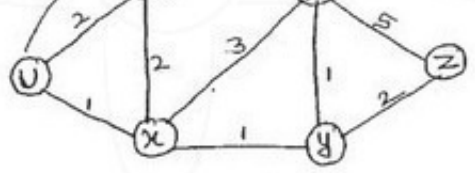


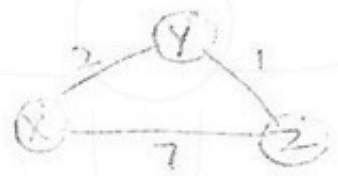
Fig. Q5(a)

b. Draw IPV4 datagram format. Mention the significance of each field. **(10 Marks)**

OR

6 a. Write distance Vector Routing Algorithm and apply it to the following graph. [Refer Fig. Q6(a)]. **(10 Marks)**

Fig. Q6(a)



b. Draw IPV6 datagram format. Mention the significance of each field. **(10 Marks)**

Module-4

7 a. Explain Diffie – Hellman Key Exchange Protocol. Suppose two parties A and B wish to set up a common secret key between themselves using Diffie Hellman Protocol selecting generator as 3 and prime number as 7. Party A chooses 2 and Party B chooses 5 as their respective secret. Find the Diffie Hellman Key. **(10 Marks)**

b. Explain Data Encryption Standard (DES) algorithm. **(10 Marks)**

OR

8 a. Explain three phases of RSA Algorithm. For an encryption of a 4 – bit message "1000" or M = 9 we choose a = 3 and b = 11. Find the Public and Private keys for this security action and show the Cipher text. **(10 Marks)**

b. Write short notes on :
i) Security Implementation in wireless IEEE 802.11.
ii) Firewalls. **(10 Marks)**

Module-5

9 a. Explain how DNS Redirects a User's request to a CDN Server. **(10 Marks)**

b. Explain RTP Basics and RTP packet Header fields. **(10 Marks)**

OR

10 a. Explain the properties of Audio and Video. Also mention the three key distinguishing features of Streaming Stored Video. **(10 Marks)**

b. With neat diagram, explain Session Initiation Protocol (SIP) Call establishment. **(10 Marks)**

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