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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

- 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)
 - 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

- Explain with neat diagram, the socket related activity of client – server communication over the TCP along with client and server code. (10 Marks)
 - Explain FTP with its Commands and Replies. (10 Marks)

Module-2

- 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 , 1000111100001100. Find the checksum. How does the receiver detect errors? Is it possible that 1 – bit errors will go undetected? (10 Marks)
 - Explain Sender and Receiver side Finite State Machine (FSM) representation for rdt 2.1 protocol. (10 Marks)

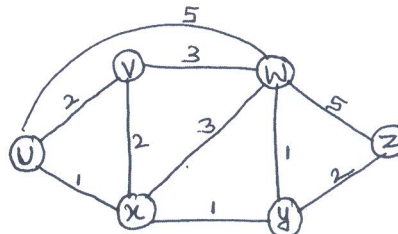
OR

- Draw TCP Segment structure. Describe the various fields of TCP segment structure. (10 Marks)
 - 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

- 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)



- 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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