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C – 2456

Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, May 2017

(2013 Scheme)

13.803 : COMPUTER COMMUNICATIONS (T)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions :

1. How are networks used in teleconferencing ?
2. What are the key elements of a protocol ?
3. What is the difference between a central and a secondary hub ?
4. Assume six devices are arranged in a mesh topology. How many cables are needed ? How many ports are needed for each device ?
5. What are the responsibilities of the transport layer ?
6. How do the layers of the TCP/IP protocol suite correlate to the layers of the OSI model ?
7. What is the difference between bit rate and baud rate ?
8. Compare WDM with FDM,
9. What are the four types of redundancy checks used in data communications ?
10. Why is authentication necessary in Internet communication ? **(10×2=20 Marks)**

P.T.O.

PART – B

Answer **any one full** question from **each** Module, **20** marks **each** :

Module – I

11. a) Suppose that a group of workstations is connected to an Ethernet LAN. If the workstations communicate only with each other, does it make sense to use IP in the workstations ? Should the workstations run TCP directly over Ethernet ? How is addressing is handled ?

    b) Explain how the notion of multiplexing can be applied at the data link, network and transport layers. Draw the figure that shows the flow of PDUs in each multiplexing scheme.

OR

12. a) Consider an internetwork architecture that is defined using gateways/routers to communicate across networks but that uses a connection-oriented approach to packet switching. What functionality is required in the routers ? Are any additional constraints imposed on the underlying networks ?

    b) Which of the TCP/IP transfer protocol (UDP or TCP) would you select for the following applications : packet voice, file transfers, remote login, multicast communication (i.e., multiple destinations). Justify your answer.

(20×1=20 Marks)

Module – II

13. a) Is it possible for a network to offer best-effort connection-oriented service ? What features would such a service have and how does it compare to best-effort connectionless service ?

    b) Apply the end-to-end argument to the question of how to control the delay jitter that is incurred in traversing a multi-hop network.

OR

14. a) Circuit switching requires that the resources allocated to a connection be released when the connections has ended. Compare the following two approaches to releasing resources :

   i) Use an explicit connection release procedure where the network resources are released upon termination of the connection and

   ii) Use a time-out mechanism where the resources allocated to a connection are released if a "connection refresh" message is not received within a certain time.

   b) Suppose that a datagram packet-switching network has a routing algorithm that generates routing tables so that there are two disjoints paths between every source and destination that is attached to the network. Identify the benefits of this arrangement. What problems are introduced with this approach ?

(20×1=20 Marks)

Module – III

15. a) Use HDLC and Ethernet to identify three similarities and three differences between medium access control and data link control protocols. Is HDLC operating as a LAN when it is used in normal response mode and multipoint configuration ?

   b) An application requires the transfer of network layer packets between clients and servers in the same LAN. Explain how reliable connection-oriented service can be provided over an Ethernet LAN. Sketch a diagram that shows the relationship between the PDUs at the various layers that are involved in the transfer.

OR

16. a) Take any binary polynomial of degree 7 that has an even number of non-zero coefficients. Show by long hand division that the polynomial is divisible by $x + 1$.

   b) Show that an easy way to find the minimum distance is to find the minimum number of columns of parity check matrix H whose sum gives the zero vector.

(20×1=20 Marks)

Module – IV

17. a) For Public-Key encryption, discuss the keys and their ownership.

    b) Explain the concept of virtual private networks. Why it is needed ?

OR

18. a) Explain why the processing required to provide privacy service is more complex than the processing required for authentication and for integrity.

    b) Compare the level of security provided by a server that stores a table of IDs and associated passwords as follows :

    i) Name and password stored unencrypted.

    ii) Name and password stored encrypted form.

    iii) Hash of name and password stored. **(20×1=20 Marks)**