Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 90188

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth Semester
Electronics and Communication Engineering
EC 8551 – COMMUNICATION NETWORKS
(Common to Electronics and Telecommunication Engineering)
(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What are the key benefits of layered network ?

2. List the responsibilities of data link layer.

3. State in brief the Frequency Hopping Spread Spectrum (FHSS) technique.

4. What is exposed station problem ?

5. State few disadvantages of wireless LANs.

6. Distinguish between virtual circuit and datagram type of routing.

7. Distinguish between TCP and UDP.

8. Mention various techniques used to improve Quality of Service (QoS).

9. What is the mail transfer protocol used in the Internet ?

10. State the operation of the packet-filter firewall.

PART – B (5×13=65 Marks)

11. a) Draw the block diagram and explain the functionalities of different OSI layers. (13)

(OR)

b) i) Mention key advantages and disadvantages of stop-and-wait ARQ technique. (4)

ii) What is piggybacking ? What is its advantage ? (4)

iii) For a k-bit numbering scheme, what is the range of sequence numbers used in sliding window protocol ? (5)

12. a) State some advantages of Wireless LANs. (13)

(OR)

b) What is High-level Data Link Control (HDLC)? What are different modes of operations of HDLC ? (13)

13. a) Explain few characteristics of Border Gateway Protocol (BGP) ? (13)

(OR)

b) Define routing and compare distance vector routing and link state routing. (13)

14. a) i) What is meant by congestion ? What two new TCP sender state variables are used in TCP congestion control ? What is the purpose of each of these state variables ? What two new algorithms were added to provide TCP congestion control ? What is the purpose of each ? Give a brief overview of the operation of each. (8)

ii) What are the differences between service point address, logical address and physical address ? (5)

(OR)

b) i) Give few examples of similarities and dissimilarities between TCP and UDP. (8)

ii) Suppose TCP operates over a 1-Gbps link, utilizing the full bandwidth continuously. How long will it take for the sequence numbers to wrap around completely ? Suppose an added 32-bit timestamp field increments 1000 times during this wrap around time, how long will it take for the timestamp field to wrap around ? (5)

15. a) i) What is the difference between a User Agent (UA) and a Mail Transfer Agent (MTA) ? (3)

ii) Why is an application such as POP needed for electronic messaging ? (5)

iii) How is a secret key different from public key ? (5)

(OR)

b) i) How does MIME enhance SMTP ? (6)

ii) What are the advantages and disadvantages of public key encryption ? (7)

PART – C (1×15=15 Marks)

16. a) An organisation is granted the block 125.238.0.0/16. The administrator wants to create 512 subnets :

i) Find the subnet mask required. (3)

ii) Find the number of addresses in each subnet. (2)

iii) Find the first and last allocatable addresses in subnet 1. (5)

iv) Find the first and last allocatable address in subnet 14. (5)

(OR)

b) There are two popular technologies for Local Area Network (LAN) design, namely IEEE 802.3 Ethernet and IEEE 802.11 WiFi. Use your knowledge of these technologies to answer the following questions :

i) What Datalink Layer service model is provided by each of these LAN technologies ? How are they similar ? How are they different ? (3)

ii) List three similarities about LLC frames in Ethernet and WiFi. (3)

iii) Which of these two LAN technologies has the higher bit error rate, and why ? (3)

iv) Which LAN technology provides better support for mobile users, and how ? (3)

v) List and explain any two other features of WiFi technology that are not available (or even possible) in Ethernet LANs. (3)

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