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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Electronics and Communication Engineering **Duration: 3 hrs.**
Course Code: 19EC6PCCCN **Max Marks: 100**
Course: Computer Communication Networks **Date: 19.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Discuss the design issues of layers. **8**

b) Distinguish Wired and Wireless transmission media, justify the significance of twisting in twisted pair cable. **8**

c) A Three stage space division switch with N= 120 has 10 cross bars in the first and third stages and 4 crossbars in the middle stage. Calculate the total number of cross points. Find the possible number of cross points if a single crossbar (120 X 120) is used. **4**

UNIT - II

2 a) A path in a digital circuit-switched network has a data rate of 1 Mbps. The exchange of 1000 bits is required for the setup and teardown phases. The distance between two parties is 5000 km. answer the following questions if the propagation speed is 2×10^8 m/s: **06**

i) What is the total delay if 1000 bits of data are exchanged during the data transfer phase?

ii) What is the total delay if 100,000 bits of data are exchanged during the data transfer phase?

iii) What is the total delay if 1,000,000 bits of data are exchanged during the data transfer phase?

b) Describe the control field in HDLC frame. **10**

c) What is piggybacking, describe the advantages of piggy backing. **04**

UNIT - III

3 a) Explain the frame format for IEEE 802.3 **10**

b) For a network using CDMA Compute W2 and W4 if W1= [-1], compare it with the computation if W1= [+1]. **10**

OR

4 a) With appropriate analysis discuss why CSMA/CD is not suitable for wireless network. **04**

b) Outline the advantages of VLAN. **06**

c) Describe CSMA/CA protocol with flow chart. **10**

UNIT - IV

5 a) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows: **10**

i. The first group has 64 customers; each needs 256 addresses.

ii. The second group has 128 customers; each needs 128 addresses.

iii. The third group has 128 customers; each needs 64 addresses.

Design the sub blocks and find out how many addresses are still available after these allocations.

b) An organization is granted the block 16.0.0.0/8. The administrator wants to create 500 fixed-length subnets. **10**

i. Find the subnet mask.

ii. Find the number of addresses in each subnet.

iii. Find the first and last addresses in subnet 1.

iv. Find the first and last addresses in subnet 500.

OR

6 a) Describe IETF strategies for transition from IPv4 to IPv6 **06**

b) Describe link state routing algorithm. **10**

c) OSPF messages propagate faster than RIP messages - justify the statement with appropriate explanation. **04**

UNIT - V

7 a) Describe how connection is established in TCP protocol. **10**

b) What is quality of service. Describe the scheduling technique used to improve quality of service. **10**

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