concept and divide the given network address into four subnetworks known as SN_1, SN_2, SN_3 and SN_4. 10

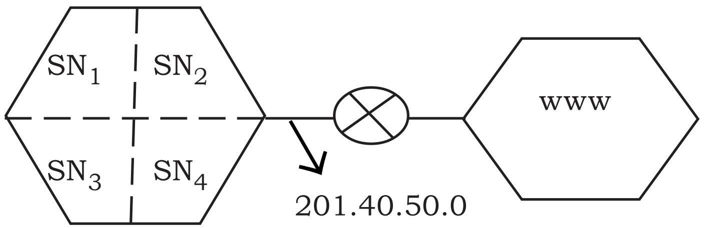

Figure-2

UNIT-V

9. Explain the following protocols. 14

   (i) TCP

   (ii) UDP

10. Write short notes on any two : 14

    (i) HTTP

    (ii) FTP

    (iii) SNMP

    (iv) SMTP

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UG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(4th Semester)

Course No.: MCSCC-401

(Data Communication & Computer Network)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) Explain the OST model in detail. 10

   (b) In the Mesh Techonology as shown in figure-1, how many links are needed if stations are connected in full duplex-mode. 1

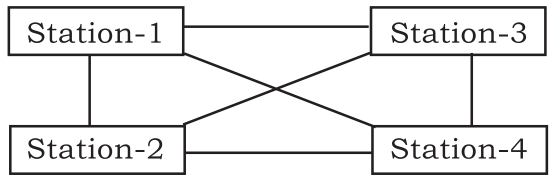

Figure-1

   (c) What are the differences between half-duplex and full-duplex transmission modes. 3

Turn Over

2. (a) For each of the following four networks, discuss the consequences if a connection fails. 12

(i) Six devices arranged in a bus topology

(ii) Four devices arranged in a ring topology

(iii) Five devices arranged in a mesh topology

(iv) Seven devices arranged in a star topoloy (not connecting the hyb)

(b) For n devices in a network, what is the number of cable links required for ring, bus and star topology. 2

UNIT-II

3. (a) Explain the encoder and decoder part of cyclic redundancy check, if the Dataworld (ω) is 1001 and the division is 1011. 12

(b) Compare synchronous and asynchronous transmission. 2

4. (a) Explain the checksum technique for Error Detection, if the sender side set is {7, 12, 11, 0, 6} 9

(b) What do you mean by hamming code and hamming distance? 2

(c) What is the hamming distance for each of the following code words. 3

(i) d(1000, 01000)

(ii) d(10101, 10010)

(iii) d(1111, 1111)

UNIT-III

5. (a) What do you mean by framing? Explain the character oriented framing and bit-oriented framing. 10

(b) Write the sender side algorithm for stop and wait protocol (Noiseless). 4

6. (a) Why the size of sender window must be less than 2^m in stop and wait protocol. 4

(b) Explain various methods of channel sense of CSMA technique. 6

(c) Explain CSMA/CD technique of collision detection. 4

UNIT-IV

7. (a) Explain the classfull addressing and classless addressing. 8

(b) A classless address is 205.16.37.31/28. 6

(i) Calculate the first IP address of the block.

(ii) Calculate the last IP address of the block

(iii) Total number of IP address in that block

(iv) How many host terminal will be available in that block?

8. (a) Explain the concept of subnetting and supernetting. 2+2=4

(b) The IP address of a network 201.40.50.0 as shown in figure-2. Implement the subnetting