Total number of printed pages = 4

19/4th Sem/DCSE 402

2022

COMPUTER COMMUNICATION AND NETWORKING

Full Marks – 100

Time – Three hours

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

Answer any *five* questions.

1. (a) Write a brief note on 'Star topology' and 'Mesh topology'. 3+3=6

   (b) Explain TCP/IP model with the help of a diagram. 10

   (c) How packet switching is different from circuit switching ? Explain in brief. 4

2. (a) Explain with diagram any two persistence methods of CSMA. 5+5=10

   (b) What is CSMA / CD ? How can it improve the performance of the CSMA protocol ? 2+3=5

   (c) Differentiate between FDMA and TDMA. 5

[Turn over

3. (a) Explain with the help of an example how multiple stations can access a shared channel in CDMA. 8

(b) Define error control and flow control. 2+2=4

(c) A bit stream 1001 is transmitted using the standard CRC method. The generator polynomial is $x^3 + x + 1$. 4+4=8

(i) What is the actual bit string transmitted ?

(ii) Suppose the fourth bit from the left is inverted during transmission. How will receiver detect this error ?

4. (a) Write a brief note on Stop-and-Wait ARQ. 6

(b) Compare Go-Back-N Vs. Selective Repeat ARQ with the help of examples. 8

(c) State the differences between MAC address and IP address. Find the class of the following IP addresses : 3+3=6

(i) 14.23.120.24

(ii) 129.14.6.8

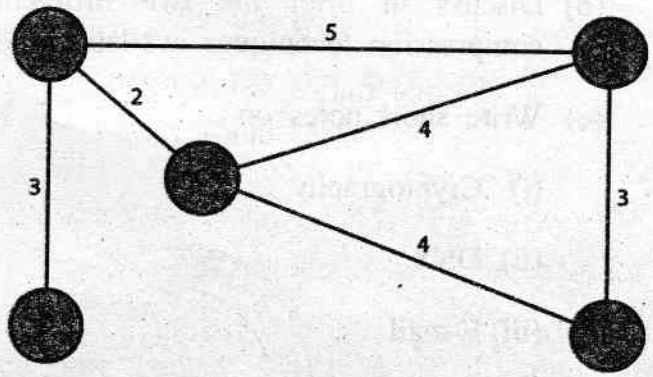
(iii) 208.34.54.12.

5. (a) Define the following : 3×2=6

Unicast

Broadcast and Multicast routing.

(b) Consider the following graph representing an Autonomous System (AS) where nodes are used to represent the routers whereas links between routers are represented by edges.



Apply distance vector routing to the above AS and generate the routing tables for the different routers. Show each step explicitly. 10

(c) State the differences between Distance vector routing and Link state routing. 4

6. (a) Define connection-oriented and connectionless services. 2+2=4

(b) Discuss the various services of TCP. 8

(c) Write few applications of UDP. 4

(d) Explain in brief dialog control and activity management in session layer. 2+2=4

7. (a) What is data compression ? 1

(b) Discuss in brief the two different data compression techniques available. 2+2=4

(c) Write short notes on : 5×3=15

(i) Cryptography

(ii) DNS

(iii) E-mail.