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Reg. No.

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V Semester B.C.A. Degree Examination, March/April - 2022

COMPUTER SCIENCE

Data Communication & Networks

(CBCS Scheme)

Paper : BCA 501 T

Time : 3 Hours

Maximum Marks : 100

Instructions to Candidates:

Answer all sections.

SECTION - A

I. Answer any **Ten** questions. Each question carries **2** marks. (10×2=20)

1. List out any two goals of a computer network.
2. Write any two differences between half - duplex and full - duplex transmission modes?
3. State the formula for maximum data rate of a noisy and noiseless channel.
4. Categorize the four basic topologies in terms of line configuration.
5. How does guided media differ from unguided media?
6. Distinguish between synchronous and statistical TDM.
7. Expand HDLC. State the different frame types.
8. Define piggybacking and its benefit.
9. What is ALOHA?
10. What is NIC and its use?
11. Write down any two differences between connection-oriented and connectionless network service.
12. What is a router?

[P.T.O.]



SECTION - B

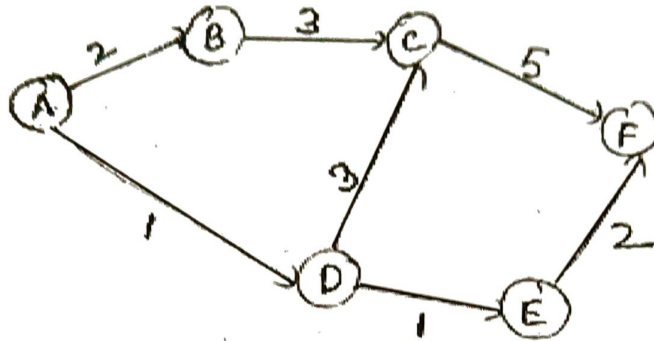
- II. Answer any **Five** questions. Each question carries **5** marks. (5×5=25)
13. Define the term data communication. What are the characteristics of effective data communication system?
 14. For the bit stream 01001110 sketch the waveforms for NRZ-L, NRZ-I, Bipolar AMI, Manchester. Differential Manchester. Assume that the signal level for the preceding bit for NRZ-I was high, the most recent preceding 1 bit (AMI) has a negative voltage.
 15. Explain the characteristics of co-axial cable with neat diagram. What are the advantages of coaxial cable over the twisted pair cable?
 16. Compare and contrast bit - stuffing and byte - stuffing.
 17. Illustrate CSMA/CD method.
 18. What is a bridge? Explain the different types of bridges.
 19. Write Bellman Ford algorithm.
 20. Discuss briefly about fragmentation.

SECTION - C

- III. Answer any **Three** questions. Each question carries **15** marks. (3×15=45)
21. a. Explain OSI reference model with a neat diagram. (8)
b. Detect and correct the single error in the received Hamming code word 10110010111. Assume even parity system. (7)
 22. a. Explain CRC method of error detection. Give an example. (8)
b. Explain congestion control Algorithm. (7)
 23. Draw the flow diagram of Stop - and - Wait protocol using the following scenario :
 - a. The frame is sent and acknowledged. (3)
 - b. The second frame is sent, but lost. After time-out it is resent. (4)
 - c. The third frame is sent and acknowledged, but the acknowledgment is lost. The frame is resent. Identify the problem with this scheme. How can this problem be corrected using sequence numbers and acknowledgement numbers? (8)
 24. a. Describe FDDI. (7)
b. Explain the working and frame format of Token Ring. (8)



- 25. a. Explain different types of packets switching methods. (7)
- b. What is shortest path routing? Find the shortest path between node A and node F for the following figure by applying Dijkstra's algorithm. (8)



SECTION - D

IV. Answer any **One** question. Each question carries **10** marks. (1×10=10)

- 26. What is a MODEM? Explain its types.
- 27. Explain SONET.
