

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2023

SECOND YEAR [BATCH 2021-24]

COMPUTER SCIENCE [Honours]

Date : 27/05/2023

Time : 11 am – 1 pm

Paper : CC10

Full Marks : 50

Answer any five questions:

[5×10]

1. a) What are the advantages of multipoint connection over a point-to-point connection? Explain with practical examples.
b) Compare IP address, MAC address and Port address.
c) Suppose a computer sends a frame to another computer on a bus topology LAN. The physical destination address of the frame is corrupted during the transmission. What happens to the frame? How can the sender be informed about the situation? [4+3+3]
2. a) Establish a relationship between the number of redundant bits required to correct d number of data bits for single bit error correction using Hamming Code.
b) Differentiate between the followings:
i) ASK and FSK
ii) Synchronous TDM and Statistical TDM [4+(3+3)]
3. a) Encode 10110011 using Manchester line coding scheme.
b) The attenuation of a signal is -10 dB. What is the final signal power if it was originally 5 W?
c) For each of the following two networks, discuss the consequences if a connection fails:
i) five devices arranged in a bus topology.
ii) Four devices arranged in a mesh topology. [4+2+4]
4. a) Write down the advantages of satellite communication.
b) Differentiate between circuit switching and packet switching.
c) Write down the responsibilities of the Data Link Layer. [3+4+3]
5. a) With the help of a flow diagram represent the given scenario: In a Stop-and-wait ARQ, Frame 0 is sent and acknowledged but the acknowledgement is lost. After timeout the Frame 0 is resent and acknowledged. Frame 1 is sent and acknowledged. Frame 0 sent and is lost and resent after timeout.
b) Explain DHCP.
c) Explain why an ARP request is broadcast and ARP reply is unicast. [5+3+2]
6. a) You are given the following address: 154.50.6.27/25. Determine the subnet mask; address class, subnet address and broadcast address.
b) A router has the following entries in its routing table:

Address / Mask	Next hop
135.45.56.0/22	Interface 0
135.46.50.0/22	Interface 1
192.53.40.0/23	Router 1
Default	Router 2

- i) What is the next hop the routers routes if a packet with the IP addresses 135.46.57.14 arrive at it?
- ii) What is the next hop the routers routes if a packet with the IP addresses 135.46.52.2 arrive at it?
- c) Write a short note on logical to physical address mapping. [3+(2+2)+3]