RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, JUNE 2022
SECOND YEAR (BATCH 2020-23)

Date : 25/06/2022

Time : 11.00 am – 1.00 pm

COMPUTER SCIENCE (HONOURS)

Paper : X [CC10]

Full Marks : 50

Answer **any five** questions of the following: [5×10]

1. a) 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.
   b) What is the difference between a port address, a logical address and a physical address?
   c) Explain the advantages of fibre optic cable. [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 FDM and TDM.
   c) A signal travels from point A to point B. At point A, the signal power is 100 W. At point B, the power is 90 W. What is the attenuation in decibels? [4+3+3]

3. a) Encode 01110011 using Differential Manchester line coding scheme.
   b) Differentiate between Circuit Switching and Packet Switching.
   c) What extra functions can a Router perform as compared to a Hub? Explain. [4+3+3]

4. a) Why the sender window size in Go-Back-N ARQ is 2^m-1? Where m is the size of the sequence number field in bits.
   b) Differentiate between Stop-n-Wait ARQ and Selective Repeat ARQ.
   c) How is Kepler's law related to satellite communication? [5+3+2]

5. a) Given the data word 1010011110 and the divisor 10111. Show the generation of codeword at the sender side using binary division.
   b) Write short note on NAT.
   c) What is the role of DHCP? [4+4+2]

6. a) The routing table of a router is shown below:

Destination	Subnet Mask	Interface
128.75.43.0	/24	Eth0
128.75.44.0	/25	Eth0
192.12.17.5	/32	Eth3
Default		Eth1

   On which interfaces will the router forward packets addressed to 128.75.43.16 and 192.12.17.10 respectively?
   b) Compare vulnerable times of Pure ALOHA and Slotted ALOHA.
   c) Write down the advantage of using QPSK over PSK. [4+5+1]

7. a) What is DNS resolver?
   b) Explain GET, POST methods of HTTP.
   c) What is the advantage of MIME?
   d) What do you mean by Active Webpage? [2+3+2+3]

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