

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SIXTH SEMESTER EXAMINATION, MAY 2019

THIRD YEAR [BATCH 2016-19]

COMPUTER SCIENCE [Honours]

Date : 08/05/2019

Time : 11 am – 1 pm

Paper : VII [Gr – B]

Full Marks : 45

1. Answer **any one** question of the following : [1 × 5]

- a) i) What are the advantages of satellite communication?
- ii) Write one application of MEO satellite system.
- iii) Explain baseline wandering. (2+1+2)
- b) Briefly explain the relation between Bit rate & Baud rate with example. (5)

Answer **any four** questions from question nos. 2 to 7 : [4 × 10]

- 2. a) A noiseless channel is transmitting a signal with four signal levels. Calculate the maximum bit rate of the channel.
- b) What is the advantage of frequency domain representation over time domain representation of an analog signal?
- c) For n devices in a network, what is the number of cable links required for a mesh, ring, bus and star topology?
- d) Draw a hybrid topology with a star backbone and four ring networks.
- e) Suppose a computer sends a packet at a transport layer to another computer somewhere in the Internet. There is no process with the destination port address running at the destination computer. What will happen? (2+1+2+2+3)
- 3. a) Encode 0101101010 using Manchester Encoding.
- b) Explain the working principle of Geostationary satellite and Microwave communication.
- c) Explain the IEEE 802.11 standard.
- d) Explain the application of NAT. (2+(2+2)+2+2)
- 4. a) Explain QPSK with example.
- b) How does FDM combine multiple signals into one.
- c) Explain how frame sequence numbers and acknowledgement numbers are handled in Stop-and-Wait ARQ.
- d) What are the two main methods of error correction? (3+3+3+1)

5. a) What are the advantages of OFC?
b) Write one application of co-axial cable.
c) Find out Hamming code for the data bit 10100101101 for a fifteen bit codeword representation. Also show how single bit error can be corrected.
d) Draw the 802.3 MAC frame and describe any two fields. (2+1+4+3)
6. a) Explain the steps of PCM encoding.
b) How PCM differs from DM?
c) Suppose an organisation has been allotted the block 20.12.40.0/26, which contains 64 addresses. The organisation needs to divide the address into four sub-blocks of 16 addresses each. Derive range of addresses with subnet masks.
d) Compare port address and MAC address. (4+1+3+2)
7. a) Explain each component of the following URL:
phttps://www.mycompany.org/consumer/login.php
b) Write short note on DNS.
c) Briefly describe the four columns of a routing table in classless addressing.
d) Compare hub and router. (2+3+3+2)

_____ × _____