CBCS SCHEME

USN | | | | | | | | | | |

15CS46

Fourth Semester B.E. Degree Examination, Feb./Mar. 2022
Data Communication

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is Data Communication? Explain the components of data communication. **(06 Marks)**

b. Discuss different ways in which a network is laid out physically. **(06 Marks)**

c. Calculate the bit rate of 4K-TV, where resolution is 3840 × 2160 at 30 frames per second. **(04 Marks)**

OR

2 a. Code the sequence 101110101 using NRZ-L, Manchester and AMI. **(06 Marks)**

b. Explain layers of TCP/IP protocol suite. **(07 Marks)**

c. Differentiate: i) Analog signal and digital signal ii) Periodic and non-periodic signal. **(03 Marks)**

Module-2

3 a. Discuss different types of serial data transmission. **(06 Marks)**

b. Explain amplitude shift keying and frequency shift keying techniques of digital to analog conversion with an example waveform for each. **(07 Marks)**

c. An analog signal carries 4 bits per signal element, If 2000 signal elements are sent per second, find the bit rate. **(03 Marks)**

OR

4 a. With a diagram, explain datagram switching. **(06 Marks)**

b. What is multiplexing? Identify and explain multiplexing technique where guard bands are used. **(07 Marks)**

c. Four 1 Kbps connections are multiplexed together. A unit is 1 bit, find duration of
i) Each input slot ii) Each output slot iii) Each frame. **(03 Marks)**

Module-3

5 a. Assume data at source is 1001 and divisor is 3011. Use CRC technique to
i) Calculate code generated at encoder
ii) Calculate dataword at decoder and verify wheather data is accepted or not. **(06 Marks)**

b. How encoding and decoding is performed using simple parity check code? Describe with figures. **(07 Marks)**

c. Differentiate between types of errors. **(03 Marks)**

OR

6 a. What is framing? Discuss the two approaches of variable size framing. **(06 Marks)**

b. With a diagram, explain fields of HDLC I-frame. **(07 Marks)**

c. Describe the sender states of stop-and-wait protocol. **(03 Marks)**

Module-4

7 a. Identify and explain channelization protocol where the available bandwidth is divided into frequency bands. **(06 Marks)**

b. Distinguish between pure ALOHA and slotted ALOHA with necessary diagram. **(07 Marks)**

c. List four generation of Ethernet evolution. **(03 Marks)**

OR

8 a. Explain frame format of the standard Ethernet. **(08 Marks)**

b. Discuss Bluetooth architecture. **(08 Marks)**

Module-5

9 a. Briefly discuss the operation of cellular telephony. **(08 Marks)**

b. Explain routing in mobile IP networks. **(08 Marks)**

OR

10 a. Describe data transfer phase of remote host and mobile host communication. **(08 Marks)**

b. List extension header types of IPV6. Explain the packet format of IPV6 datagram. **(08 Marks)**

* * * * *