BTECH
(SEM VII) THEORY EXAMINATION 2019-20
DATA COMMUNICATION NETWORK

Time: 3 Hours   *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   **Attempt *all* questions in brief.**   **2 x 7 = 14**
   a. A periodic signal has a bandwidth of 20Hz. The highest frequency is 60Hz. What is the lowest frequency? Draw spectrum if signal contains all frequency of same amplitude.
   b. Name the four basic topologies and write an advantage of each type.
   c. A code scheme has a hamming distance d_{min} =4, what is the error detection & correction capabilities of this scheme?
   d. What is byte stuffing and unstuffing?
   e. Can a host have more than one IP address. Justify
   f. Change the following IPv4 address from allotted decimal notation to binary notation.
       (i) 111.56.45.78   (ii) 221.34.7.82
   g. What is error detection and correction? Also explain why is it required.

SECTION B

2.   **Attempt any *three* of the following:**   **7 x 3 = 21**
   a. What do you mean by protocol layering that needs to be followed to make communication bi-directional?
   b. Define random access and enlist its protocols in this category.
   c. Compare and contrast flow control and error control.
   d. What do you understand by framing. Explain in detail
   e. Write short note on cryptography.

SECTION C

3.   **Attempt any *one* part of the following:**   **7 x 1 = 7**
   a. Categorize the four basic topologies in term of line configuration.
   b. We have two computers connected by an Ethernet hub at home. Is this a LAN or WAN? Explain the reason. https://www.aktuonline.com
4.   **Attempt any *one* part of the following:**   **7 x 1 = 7**
   a. Explain the meaning of following terms related to CSMA/CD multiple access control method:
       i). Broadcast mode   (ii) Collision and carrier sense.
   b. Compare the reason for moving from stop-and-wait ARQ protocol to the go-back-N ARQ protocol.
5.   **Attempt any *one* part of the following:**   **7 x 1 = 7**
   a. Discuss the concept of redundancy in error detection & correction.
   b. Enlist various IEEE standards for LAN and explain IEEE standards 802 for it in details.
6.   **Attempt any *one* part of the following:**   **7 x 1 = 7**
   a. Why network security is important in establishing the communication.
   b. What is address resolution? Explain the contents of first byte on IP header if the IP protocol is IPv4 & header has eight bytes.
7.   **Attempt any *one* part of the following:**   **7 x 1 = 7**
   a. Compare TCP and UDP.
   b. What is fixed routing. Compare with adaptive routing.