

Paper Id: **130739**

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**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.

**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:** <https://www.aktuonline.com> **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.