

Paper Id: **130739**Roll No: 

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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 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.
  - Name the four basic topologies and write an advantage of each type.
  - A code scheme has a hamming distance  $d_{min} = 4$ , what is the error detection & correction capabilities of this scheme?
  - What is byte stuffing and unstuffing?
  - Can a host have more than one IP address. Justify
  - Change the following IPv4 address from allotted decimal notation to binary notation.  
(i) 111.56.45.78    (ii) 221.34.7.82
  - 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**
- What do you mean by protocol layering that needs to be followed to make communication bi-directional?
  - Define random access and enlist its protocols in this category.
  - Compare and contrast flow control and error control.
  - What do you understand by framing. Explain in detail
  - Write short note on cryptography.

**SECTION C**

3. **Attempt any one part of the following:** **7 x 1 = 7**
- Categorize the four basic topologies in term of line configuration.
  - 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**
- Explain the meaning of following terms related to CSMA/CD multiple access control method:  
i). Broadcast mode    (ii) Collision and carrier sense.
  - 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**
- Discuss the concept of redundancy in error detection & correction.
  - 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**
- Why network security is important in establishing the communication.
  - 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**
- Compare TCP and UDP.
  - What is fixed routing. Compare with adaptive routing.