

Total No. of Questions – [06]

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DECEMBER 2021 - ENDSEM EXAM
S. Y. B. TECH. (INFORMATION TECHNOLOGY) (SEMESTER - I)
COURSE NAME: DATA COMMUNICATION AND
NETWORKING
COURSE CODE: ES21203IT
(PATTERN 2020)

Time: [1 Hour]

[Max. Marks: 30]

Instructions to candidates:

- 1) Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

- Q.1) a) Identify the addressing schemas used in real-time networking applications and discuss it in brief. [4]
- b) Consider OSI model layer wise features and explain the peer-to-peer communication between two nodes. [6]

OR

- Q.2) a) Identify the network topologies used in real-time networking applications and discuss any two in brief. [4]
- b) Consider the role of connecting devices in network and explain the contribution of i) Layer two switch ii) Active hub and iii) Repeater. [6]

- Q.3) a) Assume simple parity-check code $C(5, 4)$, sender sends the dataword 1001. The codeword created from this dataword is 10010, discuss the following cases and find the output values [4]
- i) No error occurs
 - ii) One single-bit error in data bit
 - iii) One single-bit error in redundant bit
 - iv) Two-bit error

- b) Identify each step of CRC polynomial method and solve one example. [6]

OR

- Q.4) a) Find the value of minimum Hamming distance for the given example of coding scheme [4]
d(00000,01011), d(00000, 10101), d(00000, 10110),
d(01011, 10101), d(01011, 11110), d(10101, 11110)
- b) Use CRC method and identify the correctness of received codewords [6]
by checking the syndrome bits.
i) Dataword -1101, Common divisor- 1011,
Received code words: 1101110, 1100110
ii) Dataword -1001, Common divisor- 1011,
Received code words: 1001110, 1000110
- Q.5) a) Analyze purpose of multiple access technology. List out the advantages of it. [4]
- b) Compare and contrast FDMA and TDMA channelization methods in detail. [6]

OR

- Q.6) a) In case of multiple access analyze the meaning following terminologies 1) Reservation, 2) Propagation time 3) Back-off time 4) Transmission time. [4]
- b) Slotted ALOHA is better than pure ALOHA, justify. Compare both the techniques with the help of flow diagram. [6]