

Code: 19IT3501

III B.Tech - I Semester – Regular Examinations – JANUARY 2022
DATA COMMUNICATION & COMPUTER NETWORKS
(INFORMATION TECHNOLOGY)

Duration: 3 hours

Max. Marks: 70

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- Note: 1. This question paper contains two Parts A and B.
 2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
 3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
 4. All parts of Question paper must be answered in one place
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PART – A

1. a) List and sketch the data flow between two devices in the communication.
- b) Differentiate flow control and error control.
- c) Picturize the network layer and associated elements at source, destination and router.
- d) What is meant by address mapping?
- e) List out various traffic profiles in a data flow.

PART – B

UNIT – I

2. Explain TCP/IP protocol suite with neat sketch. 12 M
- OR
3. Discuss the following in detailed way: Network data flow, physical structures, Network models. 12 M

UNIT – II

4. a) Explain various types of errors with suitable examples. 6 M
- b) Discuss the process of encoding and decoding a message with Hamming code. 6 M

OR

5. a) Explain error detection and correction using linear block codes. 6 M
- b) Given the data word 1010011110 and the divisor 10111,
- i) Show the generation of the codeword at the sender site (using binary division).
- ii) Show the checking of the codeword at the receiver site (assume no error). 6 M

UNIT-III

6. Explain GoBackN ARQ protocol with suitable flow diagrams and algorithms between peer entities. 12 M

OR

7. Draw IPV4 header and explain the importance of each field of the header.
Assume that an IPv4 datagram is carrying 1024 bytes of data. If there is no option information, what is the value of the header length field? What is the value of the total length field? 12 M

UNIT – IV

8. a) Explain the concept of Link State Routing Protocol with suitable example. 6 M
- b) Explain Two Node instability, Split horizon and Poison Reverse, Three Node instability. 6 M

OR

9. a) Explain the following:
- Unicasting,
 - Multicasting,
 - Broadcasting,
 - Multicasting vs multiple unicasting
 - Use and applications of multicasting
- b) Discuss four decision making strategies of Multicast Distance Vector Routing protocol.

6 M

6 M

UNIT – V

10. Explain UDP protocol in detail in terms of UDP Header, Well known ports of UDP, Checksum calculation, Flow control, Error control, Queueing. Observe that the following is a dump of a UDP header in hexadecimal format.

0632000D001CE217

- What is the source port number?
- What is the destination port number?
- What is the total length of the user datagram?
- What is the length of the data?
- Is the packet directed from a client to a server or vice versa?
- What is the client process?

12 M

OR

11. What is meant by congestion and explain the need of congestion control in a network. Explain in detail how TCP applies its Congestion policies to alleviate and detect the congestion in the network.

12 M