

Code No: 114CR

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2017

DATA COMMUNICATION

(Information Technology)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

- 1.a) What is layered network architecture? [2]
- b) Explain serial and parallel data transmission. [3]
- c) Compare TDM and FDM techniques. [2]
- d) What is Satellite? Compare Synchronous and Asynchronous satellites. [3]
- e) What is Signaling in telephone? Mention types of Signaling. [2]
- f) What are the advantages of Private line data networks over switched public telephone networks? [3]
- g) Give the specifications of IS-95. [2]
- h) Explain Bar codes and their types. [3]
- i) What is bits per second and baud? [2]
- j) What is Modem training? Explain. [3]

PART-B

(50 Marks)

- 2.a) What is protocol? Explain different types of Data Communication protocols. [6+4]
- b) What is Network topology? Explain different types of network topologies. [6+4]

OR

3. Discuss in detail Analog Modulation systems and digital Modulation. [10]

- 4.a) What is Digital modulation techniques? Explain PSK and QPSK modulation techniques with neat constellation diagrams.

- b) Determine the minimum Bandwidth, baud rate and bandwidth efficiency for the bit rate $f_b = 9600\text{bps}$ for the modulation schemes i) BPSK ii) QAM. [6+4]

OR

- 5.a) What is Clarke orbit? List the advantages and disadvantages of geosynchronous satellites.

- b) Explain the following terms for optical fibres:
i) Critical angle ii) Numerical aperture iii) Acceptance angle iv) Snell's law. [6+4]

- 6.a) What is Standard telephone set? Explain its basic functions.

- b) What is single frequency Interference? Explain about types of single frequency Interference. [6+4]

OR

- 7.a) What is Cross talk? Explain different types of Cross talk.

- b) Explain (i) Dial pulses (ii) Receiver ON / OFF Hook. [6+4]

- 8.a) Explain CDMA, its channel allocation and its traffic channels.
b) For a 12 bit data string of 110011101101, determine the number of Hamming bits required, arbitrarily place the Hamming bits into the data string, determine the logic condition of each Hamming bit, assume an arbitrary single bit transmission error, and prove that the Hamming code will successfully detect the error. [5+5]

- 9.a) Explain character synchronization in detail.
b) Explain Digital cellular telephone system. [7+3]

- 10.a) Explain Synchronous Voice band Modems.
b) Explain Modem Equalizers. Describe its uses. [6+4]

- OR
11.a) Explain Modem:
i) Transmission modes
ii) Operational modes
iii) Command types.
b) Explain Cable Modems. [6+4]