

**Code No: 114CR****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech II Year II Semester Examinations, May - 2019****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) Define open systems interconnection. [2]
- b) Determine the minimum bandwidth, baud and bandwidth efficiency of 8-QAM with a bit rate of 4800 bps. [3]
- c) Define cable attenuation and crosstalk. [2]
- d) List the advantages and disadvantages of optical fiber communication. [3]
- e) What is meant by the terms tip and ring? [2]
- f) Briefly describe a local subscriber loop. [3]
- g) What is frequency division duplexing? Where it is used? [2]
- h) Briefly explain Hamming Code. [3]
- i) What is meant by data terminal equipment and data communication equipment? [2]
- j) Distinguish between bits per seconds and baud. [3]

**PART- B****(50 Marks)**

- 2.a) Describe peer to peer communication network.
  - b) Describe the principle of Quadrature Phase Shift keying (QPSK). [5+5]
- OR**
- 3.a) Briefly describe the TCP/IP protocol model.
  - b) What is the difference between bit rate and baud? Describe the relationship between bitrate, bandwidth and baud for Quadrature Phase Shift Keying (QPSK). [5+5]
- 4.a) Describe the twisted pair transmission lines. Give the difference between STP (Shielded Twisted pair) and UTP (Unshielded Twisted pair)
  - b) Determine the wavelengths for the electromagnetic waves in free space with the frequencies 100 Hz, 1kHz, 100 kHz, 1 MHz and 10 GHz. [5+5]
- OR**
- 5.a) Describe the Statistical Time Division Multiplexing.
  - b) For a data sequence of 11100101011 draw the timing diagram for UPRZ, UPNRZ, BPRZ, BPNRZ [5+5]
- 6.a) Draw the functional block diagram of a standard telephone set and explain.
  - b) Explain how caller-ID operates and when it is used. [5+5]
- OR**
7. What are the voice frequency circuit arrangements? Compare them in detail. [10]

- 8.a) Describe a cellular geographic serving area.  
b) Give GSM system architecture and describe its working principle. [5+5]

**OR**

- 9.a) Compare asynchronous and synchronous data formats.  
b) List the error detection techniques. Describe CRC. [5+5]

10. What are the MODEM synchronization methods? Describe in detail. [10]

**OR**

- 11.a) Explain the difference between Probability of error and bit error rate.  
b) List and describe the transmission modes used with data communication modems. [5+5]

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