R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2016
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) Differentiate simplex and duplex communication systems.   [2]
  b) How data is represented in case of ASCII coding system?   [3]
  c) Describe the functions of session and application layers.   [2]
  d) Describe unipolar and bipolar signal representation codes.   [3]
  e) If the bit rate =3000 and each signal element carries 6 bits. Find the baud rate. [2]
  f) Explain cross talk.   [3]
  g) State Modem specifications.   [2]
  h) What is the importance of GSM?   [3]
  i) What is the need for standards for half rate convolution encoder?   [2]
  j) Draw the transition diagram of half rate convolution encoder.   [3]

PART-B   (50 Marks)

2.a) What are the applications and advantages of Data Communication Networks?
  b) Explain the classification of Data Communication Networks.   [5+5]
OR
3.a) Compare and contrast serial and parallel data transmission.
  b) Explain different types of modulation techniques used for data transmission.[5+5]

4.   Discuss about multiplexing and types of multiplexing. What is meant by multiplexing hierarchy or standard?   [10]
OR
5.   What are the requirements of an optical receiver? With the help of a diagram, explain receiver design.   [10]

6.a) List and explain the ITU recommendations related to numbering.
  b) Calculate dc loop resistance, if the loop resistance limit is 1250 Ω for the loop length of 10 Km. [5+5]

OR

7.a) Explain In channel Signalling in detail.
  b) During a busy hour, 1400 calls were offered to a group of trunks and 14 calls were lost. The average call duration has 3 minutes. Find Traffic Offered, Traffic Carried, Grade of Service and the total duration of period of congestion. [5+5]

8.a) Discuss various generations in Cellular mobile communications.
  b) Explain the terms Handoff Mechanism and Cell splitting. [5+5]

OR

9.a) Explain forward error correction technique.
  b) If the CRC code is 10100010111100 and the generating polynomial is $x^4+x^3+x^2+1$, check if there is any error in the code word. [5+5]

10. What is MODEM? Describe the modem operation with a block diagram. [10]

OR

11.a) What is the need of modem synchronization?
  b) Explain Cable modems requirements. [5+5]

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