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Seat
No.

T.E. (Computer Engineering) (Semester – I) Examination, 2013
DATA COMMUNICATIONS (2008 Course)

Time : 3 Hours   Max. Marks : 100

Instructions : 1) *Neat diagrams must be drawn* **wherever** *necessary.*

2) *Black figures to the* **right** *indicate* **full** *marks.*

3) *Assume suitable data, if* **necessary***.*

SECTION – I

1. a) Compare ASK, FSK, PSK techniques.   **10**

   b) Explain TDM and WDM multiplexing techniques.   **8**

                              OR

2. a) Define constellation diagram and its role in analog transmission.   **8**

   b) Explain terms:
      1) Baud rate
      2) Bit rate
      3) SNR
      4) Modulation
      5) Modulation index.   **10**

3. a) Explain effect of Gaussian noise on digital transmission.   **8**

   b) Represent 1100100111 using following digital formats.
      1) Polar NRZ   2) Bipolar NRZ
      3) AMI   4) Manchester codes.   **8**

                     OR

4. a) Explain the sampling theorem and details of reconstructing a signal from its
      sample.   **8**

   b) With help of block diagram explain the working of delta modulation receiver
      and transmitter.   **8**

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5. a) Explain the Huffman coding. Six messages have probability of 0.3, 0.25, 0.20, 0.12, 0.08, 0.05 find the Huffman code for the same. **8**

   b) What is ARQ ? Explain in short go-back-n and selective repeat methods. **8**

                      OR

6. a) Consider discrete memoryless source generating 8 symbols and probabilities are 1/32, 1/32, 1/16, 1/8, 1/8, 1/16,1/2. Apply Shannon-fano method and calculate source code for individual symbol, also calculate efficiency. **8**

   b) Write short note on CRC. **8**

                      SECTION – II

7. Write short notes on (**any three**) : **18**
   a) ATM
   b) Frame Relay
   c) Ethernet
   d) SONET.
                      OR
8. a) What is DSL ? Explain the classification of DSL technologies. **8**

   b) Explain the layers in OSI-ISO reference model. How it is different than TCP/IP model ? **10**

9. a) What is TSI and its role in Time Division Switching ? Compare space division and time division switches. **8**

   b) Explain the switching techniques used in computer data communication. **8**

                      OR
10. a) Define digital hierarchy used by telephone companies. List and explain different levels of hierarchy. **8**

    b) Explain wireless transmission media in detail. **8**

11. a) Why collision is an issue in random access protocol but not in controlled access or channeling protocols ? Justify. **8**

    b) What is code division multiple access ? Fin the Chips for a network with
       a) 2 stations   b) 4 stations **8**

                      OR
12. a) Why collision is an issue in random access protocol but not in controlled access or channeling protocols ? Explain with suitable examples. **8**

    b) What are the problems in static and dynamic channel allocation ? **8**

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B/II/13/