



[4459] – 252

Seat No.	
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**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  $\frac{1}{32}, \frac{1}{32}, \frac{1}{16}, \frac{1}{8}, \frac{1}{8}, \frac{1}{16}, \frac{1}{2}$ . 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 ? Find 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**