



Reg. No. :

Name :

**Sixth Semester B.Tech. Degree Examination, April 2014
(2008 Scheme)**

**Branch : COMPUTER SCIENCE AND ENGINEERING
08-606 : Data Communication**



Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** the questions. **Each** question carries **4** marks. **(4×10=40 Marks)**

1. Differentiate between periodic and aperiodic signals. Explain the following terms in the context of a signal :
 - a) phase
 - b) fundamental frequency.
2. Compare and contrast digital and analog transmission of data. Why is digital data transmission preferred ?
3. List and explain the factors on which the capacity of a channel depends on.
4. Describe the effect of attenuation on data transmission.
5. Write short notes on QPSK.
6. List the advantages of using biphasic techniques over NRZ schemes for encoding digital data.
7. Differentiate between modulation rate and data rate.
8. Discuss the methods used to increase the accuracy of PCM encoding scheme.
9. Differentiate between space division and time division approaches to circuit switching.
10. What is meant by an error in the context of data transmission ? What are the two types of errors that can occur in a transmission system ?



PART – B

Answer **any one full** question from **each** Module. **Each** question carries **20** marks. **(20×3=60 Marks)**

11. a) Describe the following transmission impairments :
- Delay distortion
 - Noise
- b) Discuss the different modes of wireless data transmission.

OR

12. a) What is the limitation of the Nyquist formula for calculating the capacity of a channel ? How does Shannon's formula account for the same ? Given a data transmission channel with a spectrum between 2 MHz and 10 MHz, and a SNR of 20 dB, calculate the capacity of the channel according to both these approaches.
- b) Write notes on data transmission using optical fiber as the transmission medium.
13. a) Discuss the different methods used for encoding analog data using analog signals.
- b) With suitable diagrams, explain the functioning of synchronous TDM.

OR

14. a) Write notes on delta modulation for the encoding of digital data.
- b) What is meant by frequency division multiplexing ? Explain with suitable figures.
15. a) Describe the CRC method of error detection. Calculate the check sum for a message
 $D = 10011101001$, with the pattern $P = 110101$.
- b) Explain the salient features of GPRS.

OR

16. a) Explain in detail about using
- convolution codes and
 - hamming codes for error correction in data communication systems.
- b) Discuss the architecture and working of GSM.