S.E. Sem III (CBGS).
I.T
PADC

2/11/14

QP Code : **14583**

(3 Hours) **[Total Marks : 80**

N. B. : (1) Question **No.1** is **compulsory**.
(2) Assume **suitable** data if **required**.
(3) Solve **any three** out of remaining questions.

1. Solve **any four**: **20**
   (i) Explain types of communication channels?
   (ii) Compare ASK, PSK, FSK modulation techniques?
   (iii) Explain- Fidelity
   (iv) What is quantization?
   (v) What is Image Frequency and its rejection?

2. (a) Explain the operating principal, working of Differentially Encoded Phase Shift Keying modulator and demodulator? **10**
   (b) A sinusoidal carrier has an amplitude of 10v and a frequency of 100KHZ. It is amplitude modulated by a sinusoidal voltage of amplitude 3v and frequency 500HZ. Modulated voltage is developed across 75 Ω resistance: **10**
      (i) Write the equation for modulated wave.
      (ii) Determine the modulation index.
      (iii) Draw spectrum of modulated wave.
      (iv) Calculate the total average power.
      (v) Calculate the power carried by sidebands.

3. (a) Explain the block diagram of analog and digital communication system? If information rate is maximum which type of modulation technique can be used? **10**
   (b) What is probability of error and Bandwidth requirement for BPSK? **10**

4. (a) Explain sampling theorm for bandpass signals with proof. And also explain anti-alising filter? **10**
   (b) Explain Armstrong method for FM generation? **10**

5. (a) Explain PPM generation and degeneration method? **8**
   (b) Write fourier Transform of Unit step, Delta and gate function? **8**
   (c) What is eye pattern? **4**

6. (a) Write short notes on (**any four**) **20**
      (i) Multiplexing Techniques
      (ii) Noise Figure and Noise Factor
      (iii) Pre-emphasis and De-emphasis
      (iv) Line codes
      (v) M-ray Phase Shift Keying

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