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Total number of printed pages – 2

B. Tech  
CPEC 5308

**Seventh Semester (Special) Examination – 2013**

**COMMUNICATION ENGINEERING**

**BRANCH : ELECTRICAL**

**QUESTION CODE : D 450**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which are compulsory and any **five** from the rest.  
The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2×10
  - (a) What is the cause of inter symbol interference and write it's remedies ?
  - (b) Give the signal space representation of BPSK.
  - (c) Write two examples of analog communication system.
  - (d) What is pre-emphasis and de-emphasis filter ?
  - (e) What is quantization and what is quantization error ?
  - (f) What is the importance of white noise ?
  - (g) What is crosstalk ?
  - (h) What kind of noise is referred to while evaluating a communication system performance.
  - (i) What is the advantage of parabolic reflector antenna over a dipole antenna ?
  - (j) Is companding essential in pulse transmission system justified ?
  
2.
  - (a) Explain why DSB<sub>WC</sub> AM system is wasteful of power. 5
  - (b) Compare the NBFM and an AM signal by drawing their phasor diagram. 5



P.T.O.

3. (a) Find the modulation index of the given signal.  

$$Y(t) = 100 [50 \cos(100t - 30^\circ) + 30 \sin(100t + 60^\circ)] \cos(10^5 t).$$
 5
- (b) State and prove any two properties of fourier transform. 5
4. (a) Find Bandwidth of the FM signal by the carson's rule where a carrier  $A \cos(\omega_c t)$  is modulated by a signal  $f(t) = 2 \cos(10^4 \cdot 2\pi t) + 5 \cos(10^3 \cdot 2\pi t) + 3 \cos(10^4 \cdot 4\pi t)$  take  $K_1 = 15 \times 10^3$  Hz/V. 5
- (b) Write the two silent feature of cellular system. 5
5. (a) Explain the working principle and operation of photo detector. 5
- (b) Discuss the fiber optic communication system and explain the function of each block. 5
6. (a) How much bandwidth is required to transmit a 56Kbps NRZ signal using BPSK and BFSK. 5
- (b) Derive an expression for the SNR in a PCM system. 5
7. (a) Derive the SNR of DSB-SC signal. 5
- (b) Define noise figure, what is it's significance. 5
8. Write short notes on any **two** of the following : 5x2
- (a) Noise in communication
- (b) FSK modulation scheme
- (c) Multiplexing.