

Total number of printed pages – 4 **B. Tech**
CPEC 5308

Sixth Semester Examination – 2008

COMMUNICATION ENGINEERING

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory
and any **five** from the rest.*

Provide suitable illustrations wherever necessary.

*The figures in the right-hand margin
indicate marks.*

1. Answer the following questions : 2 × 10
- (a) What are the performance measures of an analog communication system and a digital communication system ?



- (b) What is the objective of quantization ? What is quantization error ?
- (c) What is the cause of intersymbol interference ? What is its remedy ?
- (d) Bring out how FM can be generated from PM and vice versa.
- (e) Draw the impulse response of an ideal low pass filter. Is it a casual system ?
- (f) Give the signal space representation of a BFSK signal. What is the distance between the two points ?
- (g) What kind of noise is referred to while evaluating a communication system performance ?
- (h) Draw the spectrum of a DSB signal with carrier.
- (i) What is the advantage of a parabolic reflector antenna over a dipole antenna ?
- (j) Is the satellite communication system power limited or bandwidth limited ? Justify.

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CPEC 5308

2

Contd.

2. (a) Compute and plot the spectrum of a signal given by $A\cos\omega_0 t$. What does it signify ? 6
- (b) State and prove any two properties of Fourier transform. 4
3. (a) Compare an analog communication system and a digital communication system from at least four different points of view justifying each of your statements. Give examples of typical systems in use. 8
- (b) What is a matched filter ? What is its importance ? 2
4. (a) Establish why double sideband with carrier AM system is wasteful of power. 6
- (b) Explain any FM demodulator. 4
5. (a) Give circuits for generating and detecting a BFSK signal. Explain the operation of the circuits. 6
- (b) Define noise figure. What is its significance ? 4

6. (a) Draw the radiation pattern of a dipole antenna and explain how the antenna operates. 4
- (b) What are the advantages and disadvantages of radio wave propagation over ground and through ionosphere ? Give application of each type of radiation. 6
7. (a) Discuss a fiber optic communication system. Explain the function of each block. 5
- (b) Why are the uplink and the downlink frequencies different in a satellite communication system ? Discuss a transponder. 5
8. (a) Explain the working principle and operation of the photodetectors. 5
- (b) What are the sources of error in a PCM system ? Derive an expression for the SNR in a PCM system. What is its significance ? 5