

(Following Paper ID and Roll No. to be filled in your Answer Book)									
PAPER ID : 3085	Roll No.								

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2012-13

PRINCIPLES OF COMMUNICATION

Time : 3 Hours

Total Marks : 100

Note : (1) Attempt all questions.

(2) All questions carry equal marks.

(3) Notations used have usual meaning.

(4) Assume any relevant data, if missing.

1. Attempt any **FOUR** parts of the following :

- (a) Draw a block diagram of a communication system. Explain various elements.
- (b) Differentiate between Baseband and Passband Signal.
- (c) What is Modulation ? What is the need of Modulation ?
- (d) Compare Analog communication with Digital communication.
- (e) Explain Energy and Power Signals.

2. Attempt any **TWO** parts of the following :

- (a) Discuss time-domain as well as frequency-domain representation of AM Wave. Explain Balanced Modulator for generation of DSB-SC signals.
- (b) Discuss generation of VSB signals. What are its advantages ? Mention its applications.

- (c) Compare various AM systems. A 400 watt high frequency carrier wave is modulated to a depth of 75%. Determine total power in modulated wave.

3. Attempt any **TWO** parts of the following :

- (a) Compare AM Wave with angle modulated wave. Discuss Armstrong Method of generating FM Wave.
- (b) Compare Wideband and Narrowband FM signals. Explain PLL-FM demodulator.
- (c) What is Multiplexing ? Explain FDM and TDM in detail.

4. Attempt any **TWO** parts of the following :

- (a) What is Noise ? Explain various types of Noise.
- (b) Explain the following :
 - (i) SNR
 - (ii) Noise Figure
 - (iii) Noise Temperature
 - (iv) Noise Equivalent Bandwidth.
- (c) A mixer stage has a noise figure of 20dB. This mixer is preceded by an amplifier which has a noise figure of 9dB and available power gain of 15dB. Determine overall noise figure referred to the input.

5. Attempt any **TWO** parts of the following :

- (a) Derive an expression for Figure of Merit for DSB-SC system with coherent detection.
- (b) Define Entropy. Verify the following expression :

$$0 \leq H(X) \leq \log_2 m.$$
- (c) What is Channel Capacity ? Find the channel capacity of an ideal AWGN channel with infinite bandwidth.