Code: EC4T5

## II B.Tech - II Semester – Regular Examinations – May 2016

## ANALOG COMMUNICATIONS
### (ELECTRONICS AND COMMUNICATION ENGINEERING)

Duration: 3 hours                                    Max. Marks: 70

### PART – A

Answer *all* the questions.   All questions carry equal marks

11x 2 = 22 M

1.
   a) Define modulation index in case of Amplitude modulation. What happens if it is greater than unity?
   b) The AM Radio transmitter is radiating a total power of 100KW and the modulation index is 0.8, then calculate the carrier power.
   c) What is meant by quadrature null effect of coherent detector?
   d) List out the applications of SSB modulation.
   e) What is meant by phase locked loop?
   f) Define Phase modulation .
   g) Calculate the figure of merit of AM system when the depth of modulation is 100% .
   h) What is meant by threshold effect in FM?
   i) What is the need for pre-emphasis?
   j) Distinguish between TDM and FDM.
   k) List the various types of analog pulse modulation

# PART – B

Answer any ***THREE*** questions.   All questions carry equal marks.

$$3 \text{ x } 16 = 48 \text{ M}$$

2.

   a) Explain about time domain description of AM with necessary mathematical equations.                    8 M

   b) Draw the circuit of Square law modulator and explain its working.                    8 M

**3.**

   **a)** Draw the block diagram of COSTAS loop and explain its operation.                    8 M

   **b)** Explain envelop detection of VSB wave plus carrier
                    8 M

4.

   a) Explain the generation of FM using indirect method.  8M

   b) A 10 MHz sinusoidal carrier is frequency modulated by unit amplitude sinusoid of frequency 1 KHz. The frequency modulation sensitivity $K_f$= 10 Hz/volt.     8 M
      (i) What is the modulation index?
      (ii) Is this is narrow band FM or wide band FM
      (iii) What is the bandwidth of transmitted signal

5.

   a) Draw the block diagram of superhetrodyne radio receiver and explain the function of each block.                    8 M

b) Derive an expression for SNR at the output of envelope detector of a standard AM system.                    8 M


6.
   a) Explain how PAM can be generated with the help of necessary diagrams.                    8 M

   b) Discuss the generation of PWM using Monostable Multivibrator.                    8 M