2005-ANDHRA UNIVERSITY
II B.TECH I SEMESTER DEGREE EXAMINATION
ANALOG COMMUNICATION
(INFORMATION TECHNOLOGY)

TIME-3HOUR
MARKS-70

NOTE:SECTION A IS COMPULSORY.ATTEMPT ANY FOUR QUESTIONS FROM SECTION B.

SECTION A [5*2=10 MARKS]

1. (a) Define Fourier series and Fourier transforms?

(b) Explain the properties of Fourier transforms?

(c) Differentiate between Wideband FM and Narrowband FM?

(d) Show a scheme to convert PM to FM?

(e) Define the terms Sensitivity and Fidelity as applied to receivers?

SECTION B [4*15=60 MARKS]

2. (a) an AM wave form has the following form, $x(t) = 10(1+0.5 \cos 2000 \text{ pt}) \cos 2 \times 10^8 \text{ pt}$ volts. Consider 1 ohm load and find (i) the average power content of each spectral component of x(t), (ii) the side band power and (iii) modulation index.

(b) explain SSB generation using phase shift method. Discuss relative merits and demerits of SSB modulation over DSB modulation.

3. (a) Determine the Fourier transform of
$x(t) = \{\cos p t \ -1/2 = t = +1/2 \ 0 \text{ otherwise}$

(b) Prove that an Autocorrelation function is an Even function?

(c) A carrier wave $v_c(t) = A \sin wct$ is amplitude-modulated by an audio wave $v_m(t) = B \sin 3wmt$. Sketch the complete spectrum of the modulated wave and calculate the total power in the side bands in (B/A) = 0.5.

4.(a) Give the PM and FM equations. Show that FM can be generated using PM modulator.

(b) Explain with neat block schematic diagram the Armstrong method of FM generation. Draw the phasor diagram illustrating the principle.

(c) Explain the operation of Foster silly discriminator using Block diagram ?

5. (a) what is the significance of VSB signal and where does it find its application? Show that a VSB wave plus carrier retains the base band information in its envelope.

(b) an angle modulated wave is described by $F(t) = 10\cos[1 \times 10^8 \text{pt} + 10\cos 2000 \text{ pt}]$. calculate (i) power of the modulated signal, (ii) the maximum frequency deviation and (iii) band width of a signal.

6. Classify radio transmitters and explain any one AM and FM transmitters with block diagram?

7. (a) Explain major factors that influence the choice of intermediate frequency in any particular system.

(b) Draw a neat block diagram of Super heterodyne Receiver and Explain its operation?

8. (a) Draw a neat block diagram of Communication Receiver and Explain?

(b) Explain the working of delayed AGC circuit and compare the above with No, Ideal and simple AGC circuits using AGC characteristics?