

S.E. Sem 4 (REV.)

Comp. & I.T. Principles of communication Engg. 31/5/08.

VT-May.08 43

Con. 2867-08.

(REVISED COURSE)

CO-9775

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.

(2) Attempt any four questions out of remaining six questions.

1. (a) Differentiate between low level modulation and high level modulation. 20  
(b) What is noise triangle ?  
(c) What do you mean by three point tracking ?  
(d) Explain noise temperature.
2. (a) What is flywheel effect ? With the aid of waveforms, explain how a grid modulated class 'C' amplifier generates AM. 10  
(b) An AM signal appears across a  $50 \Omega$  load and has the following equation.  
 $V(t) = 10(1 + \sin 2\pi \times 10 \times 10^3 t) \sin 4\pi \times 10^6 t$   
(i) Calculate the modulation index, sideband frequencies, total power and bandwidth. 6  
(ii) Sketch the envelope of SSB signal in time domain. Also draw the spectrum of SSB signal. 4
3. (a) Explain the working of Ratio-detector. Compare its performance with that of Foster - Sedey discriminator. 10  
(b) What is AGC ? How AGC is obtain in a practical diode detector ? Explain with a neat diagram. 10
4. (a) With reference to FM generation, explain with the aid of neat figure, the indirect method of FM generation. 10  
(b) An RC reactance modulator is used to vary the frequency of a 90 MHz oscillator by  $\pm 75$  KHz. An FET whose  $g_m$  varies linearly with gate voltage from zero to 0.8 ms is used in conjunction with a resistance whose value is 1/10 of capacitive reactance used. Calculate inductance and capacitance of oscillator tuned circuit. 10
5. (a) Explain linear delta modulation. What are the various problems associated with DM ? Give its advantages. 10  
(b) Explain TDM and FDM in detail. 10
6. (a) Draw and explain in detail, along with the waveforms at each stage, the FM receiver. 10  
(b) Explain sky wave propagation in detail. 10
7. Write short notes on any two :- 20  
(a) Companding  
(b) Ring modulator  
(c) Automatic frequency control  
(d) Image frequency and its rejection.

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