

FACULTY OF ENGINEERING**B.E. 3/4 (ECE) I – Semester (Main) Examination, November 2013****Subject : Analog Communication****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (10 x 2.5 = 25 Marks)**

1. Find the power of signal $V(t) = \cos \omega_c t + \cos \omega_m t \cos \omega_c t$.
2. Define complex and pre-envelops of the signal.
3. FM carrier is given by $s(t) = 3 \cos[2\pi \cdot 10^9 t + 4 \sin 2\pi \cdot 10^3 t]$ volt. Find band width using Carson's rule.
4. Compare phasor diagrams of AM and NBFM.
5. Give the classification of radio transmitters.
6. List the factors that judge the choice of RF amplifier.
7. How do you represent the narrow band noise?
8. What is meant by figure of merit in analog communication systems?
9. State sampling theorem for band pass signals.
10. What is aperture effect in sampling process?

PART – B (5 x 10 = 50 Marks)

11. a) Derive an expression for power transmitted form AM signal.
b) i) Define Hilbert transform.
ii) Find Hilbert transform of impulse signal.
12. Explain with appropriate theory and block diagrams the working of an FM demodulator using PLL.
13. a) Justify why local oscillator frequency is selected higher than the incoming signal frequency.
b) Explain : Amplitude limiter in FM receivers, change of IF and fidelity of a receiver.
14. Prove that figure of merit of DSB-SC is superior to AM.
15. a) State and prove sampling theorem for low pass signals.
b) Draw PAM, PWM and PPM signals for a single tone message signal and explain their generation process.
16. How PPM signals can be demodulated? Give the relevant circuit and explain.
17. Write short note on :
a) Aliasing effect
b) Equivalent noise temperature
c) Double spotting
