

FACULTY OF ENGINEERING**B.E. 3/4 (ECE) I – Semester (Supplementary) Examination, July 2014****Subject : Analog Communications****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 Explain the need for modulation.
- 2 Why quadrature null effect is not serious in SSB as in DSB-SC?
- 3 Write the time expression for SSB for multitone message signal.
- 4 Compare FM and PM techniques.
- 5 Distinguish between high level and low level AM transmitters.
- 6 Why pre-emphasis and DC-emphasis is required in FM only why not in AM?
- 7 What are the different sources of noise?
- 8 Define noise figure and noise band width.
- 9 Find Nyquist frequency of the signal $V(t) = 10 \text{ Sa}(100t)$.
- 10 Why flat-top sampling is required?

PART – B (5 x 10 = 50 Marks)

- 11 a) Describe generation of SSB signal using phase shift method.
b) What is Hillbert transform? State and prove its properties.
- 12 Derive the FM equation for single tone modulation plot the spectrum. Comment on its bandwidth.
- 13 a) Draw the circuit and explain the generation of FM using reactance tube method.
b) In a broadcast superheterodyne receiver having no RF amplifier the loaded Q of the antenna coupling circuits is 50. If the IF is 455 kHz. Calculate image frequency and its rejection ratio.
- 14 Derive the relation for figure of merit for single tone FM signal.
- 15 a) Describe various types of sampling processes.
b) Describe generation of PPM signals.
- 16 a) What is spectral crowding of FM signal.
b) Derive the relation for figure of merit of multi tone AM system.
- 17 Write short notes on :
a) Shot noise b) Quadrature null effect c) Threshold effect in FM
