Code No: 09A50407 R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B. Tech III Year I Semester Examinations, May/June – 2013
Analog Communications
(Electronics and Communications Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) Give a mathematical expression for an AM signal and explain.
b) Show, how a square-law device can be used to generate an AM signal? [15]

2.a) Draw AM transmitter block diagram and explain function of each block.
b) Draw the circuit of a demodulator for DSB-SC signal and explain. [15]

3.a) Distinguish between DSB and SSB-SC system of modulation. Sketch their waveforms.
b) Discuss a suitable method of generating an SSB signal. Describe a method of detecting such signal. [15]

4.a) Derive an expression for an FM signal with carrier frequency f_c and a modulating signal $A_1 Cos\omega_1 t + A_2 Cos\omega_2 t$. Obtain an expression for the spectrum.
b) Compare narrowband FM and AM Signals. [15]

5.a) Explain a method for generating FM signal using a FET reactance modulator.
b) Explain the operation of ratio detector with the help of neat diagrams. [15]

6.a) Compare the merits and demerits of AM and FM. Discuss the SNR improvements in the above systems, giving specific values in terms of modulating parameters.
b) Explain the pre-emphasis and de-emphasis. [15]

7.a) Draw block diagram of superheterodyne receiver and explain function of each block.
b) What do you understand by the following:
i) Selectivity
ii) Fidelity
iii) Delayed AGC. [15]

8.a) With a neat diagram explain the generation of PWM signal.
b) Explain the generation of single polarity PAM signal. [15]

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