Code No: RT22045 **R13** SET - 1

II B. Tech II Semester Supplementary Examinations, Dec - 2015
ANALOG COMMUNICATIONS
(Electronics and communication Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Discuss the limits of normal AM modulation? (4M)
   b) Why is VSB modulation used in TV transmission? (4M)
   c) What are the advantages of FM over AM? (4M)
   d) Define threshold effect and explain how the name comes from. (3M)
   e) List out the different types of pulse modulation? (3M)
   f) Write the drawbacks of TRF receiver? (4M)

PART -B

2. a) What is single tone modulation and derive an expression for single tone amplitude modulated signal? (8M)
   b) A carrier signal c (t) = Cos ($2\pi.10^6$t) is modulated by a sinusoidal signal m (t) = 5Cos ($8\pi.10^3$t) to generate an AM signal. The modulation index is 0.5 (8M)
   i) Sketch the spectrum, calculate B.W and power
   ii) Calculate the ratio of side band power by carrier power

3. a) What are the advantages and applications of SSB-SC, DSB-SC and AM signal? (8M)
   b) A carrier wave of frequency 20kHz is amplitude modulated by a modulating signal f (t) = Cos ($2\pi.10^3$t) + Cos ($4\pi.10^3$t). Find the expression for the corresponding SSB-SC signal and calculate the band width. (8M)

4. a) State the methods used for demodulation of FM signals and briefly explain any one of the method. (8M)
   b) A carrier signal is frequency modulated by a sinusoidal signal of amplitude A_m and frequency F_m in a certain experiment conducted with F_m = 1 kHz and increasing A_m (starting from 0V). It was found that the carrier amplitude in the FM spectrum becomes zero when A_m = 2V. Calculate frequency sensitivity of the modulator and also calculate the value of A_m for which the carrier amplitude is reduced to zero for the second time. (8M)

5. a) Define the figure of merit and explain its significance? (8M)
   b) Derive the expression for figure of merit for the DSB-SC systems? (8M)

6. a) With suitable block diagram and waveforms explain the four channel time division multiplexing system? (8M)
   b) List out the comparisons between TDM and FDM? (8M)

7. a) Explain the operation of the double limiter and also AGC in addition to a limiter. (8M)
   b) Explain AM transmitters with modulation at high carrier power level with the help of its block diagram. (8M)

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