Code No: EC1522   **GEC-R14**

II B. Tech II Semester Supplementary Examinations, June 2017

ANALOG COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours   **Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
Answer any **FOUR** questions from **PART-B**. All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Two sinusoidal modulating signals of frequency 1kHz and 2KHz simultaneously modulate a carrier in its Amplitude. What is the bandwidth of the resulting Modulated carrier?

2. a) Draw the spectrum of VSB.

   b) Write the advantages of VSB over SSB.

3. What is the difference between TRF receiver and superhetrodyne receiver.

4. Give the differences between narrow band and wide band FM signals.

5. Compare figure of merit of AM and FM systems.

6. What is pulse modulation? List its advantages over CW modulation.

PART-B

4 × 12 = 48M

1. a) The baseband signal "m(t)" in the DSB-SC signal $S(t)=m(t).Cos(2\pi fct)$ is recovered using coherent detection, by multiplying S(t) with the waveform $Cos(2\pi fct+\Phi)$. Find the value of "Φ", if the recovered signal is to be 75% of its maximum possible value. (8M)

   b) A base band signal $m(t)=2.Cos2000\pi t+Cos6000\pi t$, modulates a carrier to generate the AM-DSB-SC signal $x(t)=100.m(t).Cos2\pi f_c t$, where f_c =1MHz. Determine the average power of each frequency component of x(t). (4M)

2. a) Give the power comparisons between SSB, DSB-FC, and AM-SC. (6M)

   b) Explain the Coherent detection of SSB signals. (6M)

3. a) Define radio receiver. Discuss the characteristics of a radio receiver. (6M)

   b) Write about the classification of Radio transmitters in detail. (6M)

4. a) In an Armstrong-type FM generator, shown in figure, calculate the maximum frequency deviation Δf for the output of the FM transmitter and the carrier frequency fc if f_1=200 KHz, f_{LO}=10.8 MHz, Δf_1=25 Hz, n_1=64 and n_2=48. (8M)
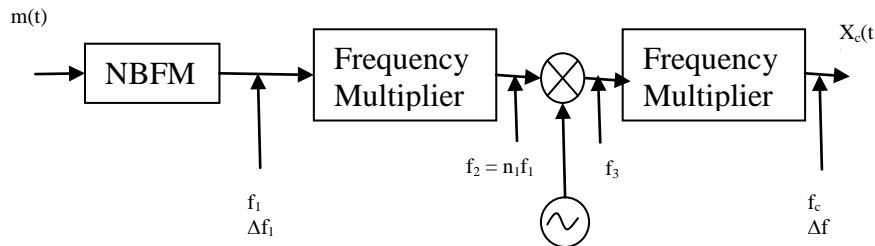
b) With the help of block diagram, describe the scheme of generating

i) FM wave from PM.

ii) PM wave from FM (4M)

5. a) What is the need of pre emphasis and de emphasis in FM receivers and what is the placement of these systems in FM receivers. (6M)

b) Calculate the figure of merit for a DSB-SC Receiver with message bandwidth consideration and transmission bandwidth consideration. (6M)

6. a) Explain the scheme used and bandwidth required for transmission of Pulse amplitude modulated pulses. (6M)

b) Differentiate between PPM and PWM pulse modulation schemes. (6M)

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