Total No. of Questions : 10] *[Total No. of Printed Pages :3*

Roll No .....

EC - 405

B.E. IV Semester

Examination, June 2013

Analog Communication

Time : Three Hours

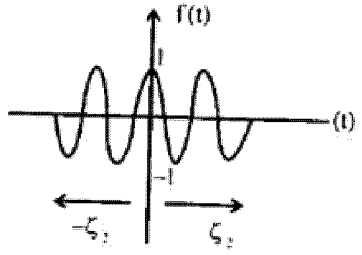
Maximum Marks : 70/100

Note: Attempt one question from each unit. All questions carry equal marks.

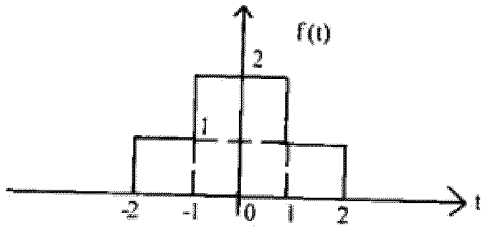
Unit - I

1. a) Find the Fourier transform of the following signals.

i)



ii)



b) Discuss about the Parseval's Power theorem.

OR

2. a) State and prove frequency shifting and time differentiation property of Fourier transform.

b) Show that unit impulse response of an ideal low pass filter is non casual.

Unit - II

3. a) Discuss the principle of operation of Costa receiver used for detecting AMSC signal.

b) Discuss the filter method for generation and detection of VSB signal.

OR

4. a) A carrier A cos wct is modulated by a single tone modulating signal $f(t) = Em \cos w_{mt}$. Find

i) Total modulated power.

ii) rms value of the modulated signal.

iii) Transmission efficiency for a 100% modulation.

b) Discuss the demodulation of AM wave using square law detector.

Unit - III

5. a) A single tone modulating signal cos ($15z\ 10^3$ t) frequency modulates a carrier of 10MHz and produces a frequency deviation of 75 KHz. Find (i) the modulation index (ii) Phase deviation produced in the FM wave. (iii) If another modulating signal produces a modulation index of 100 while maintaining the same deviation, find the frequency and amplitude of the modulating signal Kg = 15KHz per volt.

b) Discuss the principle working of FM modulation circuit using varactor diode.

OR

6. a) A modulating signal 5 cos $2\alpha 15x10^3t$, angle modulates a carrier A cos wct.
   i) Find the modulation index and bandwidth for FM and PM system.
   ii) Determine the change in the bandwidth and the modulation index for both FM and PM if f_m is reduced to 5 KHz.
   b) Discuss the principle working of Ratio detector.

Unit - IV

7. Discuss the following :
   a) High level AM transmitter.
   b) Diversity reception

OR

8. Explain the following :
   a) SSB transmitter
   b) Super heterodyne receiver

Unit - V

9. Discuss the noise from single and multiple noise source for linear systems.

OR

10. Calculate the noise figure and noise temperature for cascaded systems.

******