Roll No

EI - 503

B.E. V Semester

Examination, December 2014

Communication Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit-I

1. a) Find the Fourier transform of a single sided exponential function $e^{-bt}u(t)$ and draw the spectrum.
   b) State and prove the time shifting property of Fourier transform.
   c) Show that a normalised Gaussian pulse is its own Fourier transform.
   d) State and prove central limit theorem.

   OR

   Explain about Gaussian and Rayleigh probability density function.

Unit-II

2. a) What is the need of modulation?
   b) Differentiate between AM and FM.
   c) A carrier wave $A \cos \omega_c t$ is frequency modulated by a single tone modulating signal $f(t) = E_m \cos \omega_m t$. Find the expression of narrow band FM and draw it's phasor diagram.

   d) Discuss the methods of generation of SSB-SC signal.

   OR

   Discuss the working of pre-emphasis and de-emphasis circuits.

Unit-III

3. a) Discuss the limitations of TRF receivers.
   b) How can the selectivity and sensitivity of the receivers be improved?
   c) What are the criteria for selecting IF frequency?
   d) With the help of block diagram explain the working of super heterodyning receiver.

   OR

   Discuss the working of FM receiver.

Unit-IV

4. a) State and explain nyquist criterion for sampling.
   b) Explain quantization and its need.
   c) Discuss the working of FSK system.
   d) Discuss the working performance of AM system on the basis of noise figure.

   OR

   With the help of block diagram explain the working of QPSK system.

Unit-V

5. a) Give a brief on satellite frequency bands.
   b) With the help of block diagram explain briefly satellite system.
   c) Discuss about the working of transponders.
   d) Explain and differentiate between TDMA and FDMA.

   OR

   How are the satellite link calculations done, explain with an example?

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