Roll No .....

EI/IC-503

B.E. V Semester

Examination, June 2016

Communications 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.

1. a) An event has six possible outcomes with probabilities {1/2, 1/4, 1/8, 1/16, 1/32, 1/32}. Find the entropy of the system.
   b) What is Central Limit theorem?
   c) What do you mean by power spectral density? Write the properties of power spectral density.
   d) List various properties of Fourier transforms and prove the frequency shifting property.

   OR

   State and prove the convolution theorem. With the help of an example explain the graphical method of obtaining the convolution between the two signals.

2. a) What is the advantage of vestigial side band over SSB?
   b) State Carson's rule.
   c) Why are frequencies allotted for AM broadcasting smaller than that for FM broadcasting?

   d) Draw the circuit diagram of balanced modulator using diode for generation of DSB-SC wave. Describe the working of this circuit with necessary mathematics.

   OR

   Discuss the parameter variation method of FM generation, Include the necessary mathematics.

3. a) Differences between the Features of RF and IF amplifiers.
   b) What is the function of AGC in AM receiver?
   c) What is image rejection?
   d) With the help of a block diagram the working of a typical superheterodyne receiver. Draw the waveform at the output of each block.

   OR

   What are the limitations of TRF receivers and how are they overcome.

4. a) Explain the necessity of non linear quantizer?
   b) What is meant by quantization?
   c) State the sampling theorem.
   d) What do you mean by quantization noise, Drive an expression to calculate quantization noise in a PCM system?

   OR

   Compare typical features of FSK and PSK modulation techniques along with suitable mathematical expression.

5. a) State the basic function of satellite transponder.
   b) State the uplink frequency and downlink frequency.
   c) Explain different satellite frequency bands.
   d) Explain the function of satellite earth station with suitable block diagrams.

   OR

   Explain the satellite link equation.

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