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Anna University Exams April/May 2015 – Regulation 2013

Rejinpaul.com Unique Important Questions – 4th Semester BE/BTECH

EC6402 – COMMUNICATION THEORY

UNIT I

1. Explain with the help of block diagram the phase-shift method of sideband suppression
2. Explain the operation of square law modulator and Using super heterodyne principle, draw the block diagram of AM radio receiver and briefly explain it and its characteristics
3. Draw the block diagram for the generation and demodulation of a VSB signal and explain the Principle of operation
4. Discuss about the vestigial sideband modulation system and write its application
5. Discuss in detail about the operation of square law modulator and Switching modulator

UNIT II

1. Explain Armstrong method of FM generation with neat diagram
2. Draw the schematic diagram for basic reactance modulator using FET and explain in detail how it can be used for FM generation
3. Derive the expression for the frequency modulated signal. what do you mean by narrowband FM and wideband FM using the expression.
4. Discuss how an FM signal can be detected using phase discrimination method. Mentions its advantages and disadvantages.
5. Explain FM demodulation using PLL

UNIT III

1. State and prove various Gaussian processes
2. Give a random process $X(t) = A \cos(\omega t + \theta)$, where A and ω are constants and θ is a uniform random variable. Show that $X(t)$ is ergodic in both mean and autocorrelation
3. Find PSD, Autocorrelation function, ergodicity mean and autocorrelation for a RP $x(t) = A \cos(\omega_c t + \theta)$, where θ is uniformly distributed
4. State and discuss properties of autocorrelation function
5. Explain the following in detail (a) Auto correlation and Cross correlation (b) Ergodic process (c) WSS random process
6. Explain Power Spectral Density for LTI systems

UNIT IV

1. Explain the SNR's at Input and output of demodulators of DSB-SC and SSB-SC
2. Draw the phasor diagram of signal and noise in an angle modulated system showing both the signal and noise components
3. Explain the significance of pre-emphasis and de-emphasis in FM system
4. What is meant by narrow band noise? Explain the characteristics of narrow band noise.
5. Explain the noise in AM receiver using its noisy model block diagram

UNIT V

1. Determine the coding efficiency, redundancy of a source which is transmitting six of a messages with probabilities 0.30, 0.25, 0.15, 0.12, 0.10 and 0.08 by Huffman coding
2. Explain in detail Huffman coding algorithm and compare this with the other types of coding
3. Derive the expression for channel capacity of a continuous channel. Find also the expression for channel capacity of continuous channel of infinite bandwidth. Comment on the results
4. Discuss Source coding theorem, give the advantage and disadvantage of channel coding in detail, and discuss the data compaction
5. What do you mean by binary symmetric channel? Derive channel capacity formula for symmetric channel

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Questions Are Expected for University Exams This May or may Not Be Asked for Exams

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