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THIRD SEMESTER

B.Tech. P/T (ECE)

SUPPLEMENTARY EXAMINATION

FEB-2019

CEC-205 COMMUNICATION SYSTEMS

Time: 3 Hours

Max. Marks: 40

Note: Attempt any FIVE questions in all.

Assume suitable missing data, if any.

1.[a]What is modulation? What is the purpose of modulation in electrical communication?

[b]Discuss Envelope detector in demodulation of AM waves. [4+4=8]

2.[a]Derive an expression for SNR in AM system.

[c]Discuss the coherent detection of DSBSC modulated waves. [5+2=8]

3.[a]Define the terms sensitivity, selectivity, fidelity and image rejection ratio.

[b]Compare all AM methods in terms of bandwidth and transmitted power.

[c]Explain briefly about the thermal noise and shot noise. [4+2+2=8]

4.[a] A 5Kwatt SSB signal is to be replaced by a standard AM signal with the same power content. Determine the power content of the carrier and each of the sidebands when the $m=90\%$.

[b]Discuss generation of VSB signals. [4+4=8]

5.[a]Find the bandwidth of a narrowband FM signal which is generated by a 4 KHz audio signal modulating a 125MHz carrier. Also write the modulation index of FM wave.

[b] Discuss briefly the PLL-FM demodulator. [3+5=8]

6. [a]Define autocorrelation function and derive the autocorrelation function of output random process.

[b]Explain the significance of Pre-emphasis and de-emphasis. [4+4=8]

7. Write short notes on any two of the following

[a]Hilbert transform and power spectral density

[b]Gaussian random process

[c]Superhetrodyne receiver

[4+4=8]