Printed Pages: 3 NEC -502

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2289461 Roll No.

B.TECH

Regular Theory Examination (Odd Sem-V), 2016-17

PRINCIPLES OF COMMUNICATION

Time : 3 Hours *Max. Marks : 100*

SECTION - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

a) Compare Baseband and Passband signal.

b) How to generate a Television signal.

c) Write down the bandwidth of AM-DSB-FC, AM-DSB-SC-AM-SSB and AM-VSB.

d) Differentiate between frequency and phase modulation.

e) Define Line coding with an example.

f) How to avoid aliasing effect in a sampled signal?

g) Why thermal noise act as an important factor affecting output power in PCM technique.

h) Calculate the power spectral density of noise in Linear filter.

i) Mention the uses of a limiter-discriminator in FM Demodulation.

j) Name and Draw the various artificial spike responses of a PLL.

SECTION - B

Note: Attempt any five parts from this section. (5×10=50)

2. a) Draw a block representation of a Super hertodyne AM receiver, and explain the function of IF amplifier.

b) Derive the power calculation of AM signal.

c) Represent a binary data 1010101111111110101 using Manchester code. AMI code and Bipolar Rz.

d) Summarize the sampling process of a signal with mathematical expressions.

e) How to generate PPM from PWM signal? Explain with proper waveforms.

f) Design a FM modulation system, whose $f_c = 96MHz, \Delta f = 75k_1 / KH_z$ to broadcast an audio signal of frequency f_m = 50Hz. Using Amstrong's Indirect method.

g) Write a technical note on TDM for T1 system, with the help of a neat diagram.

h) Show the response of baseband signal for delta and adaptive delta modulation.

SECTION - C

Note: Attempt any two Questions from this section. (2×15=30)

3. Explain the concept AM-SSB modulation and demodulation with the help of neat diagram and mathematical analysis for coherent detection.

4. Describe the sampling techniques and signal recovery through holding used in PAM

5. a) Derive the spectral components of Noise. **(5)**

b) Illustrate the uses of PLL in the digital data transmission. **(10)**

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