Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EC-4004 (CBGS)

B.E. IV Semester

Examination, November 2019

Choice Based Grading System (CBGS)

Communication Systems

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Assume any missing data.

1. a) Find the Fourier transform of exponential pulse.

   b) State and proof scaling and time Convolution property of Fourier transform.

2. a) Explain correlation and Auto correlation.

   b) Explain the synchronous detection method of DSB-SC signals. What is the effect of phase and frequency errors in synchronous detection?

3. a) Find the modulated power, sideband power and net modulation index for the AM signal.

$$\phi_{AM}(t) = 10\cos(2\pi 10^6 t) + 5\cos(2\pi 10^6 t)\cos(2\pi 10^3 t) + 2\cos(2\pi 10^6 t)\cos(4\pi 10^3 t) \text{ volts.}$$

   b) Explain the types of modulation techniques.

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4. a) Explain selectivity, sensitivity and fidelity.

   b) An AM transmitter has an unmodulated carrier power of 10kW. It can be modulated by a sinusoidal modulating voltage to a maximum depth of 40%, without overloading. If the maximum modulation index is reduced to 30% what is the extent upto which unmodulated carrier power can be increased to avoid overloading.

5. a) With the help of block diagram, describe the functioning of a broadcast FM transmitter.

   b) What do you understand by AVC and fading?

6. a) Draw and explain the block diagram of producing PM from FM. What is the necessity of using frequency multipliers with PM.

   b) Explain pre-emphasis and de-emphasis.

7. a) Describe the various sources of noise.

   b) Calculate the figure of merit in FM receiver.

8. Write short note on any two:

   a) Noise figure and noise temperature.

   b) Balanced method of FM detection.

   c) VSB-SC

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