Printed pages: 1 **Sub Code: REE052**

Paper Id: 120505 **Roll No.** | | | | | | | | | | |

B.TECH.

(SEM V) THEORY EXAMINATION 2018-19

Principle of Communication

Time: 3 Hours **Total Marks: 70**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief. **2 x 7 = 14**

a. What frequencies are used in microwave communication?
b. Show the effect of phase error in coherent detection of DSB SC signal.
c. What do you mean by modulation index?
d. What is a stereophonic sound?
e. Explain pulse amplitude modulation in short.
f. What are the issues in digital transmission?
g. Explain the improvement for SNR in frequency modulation.

SECTION B

2. Attempt any three of the following: **7 x 3 = 21**

a. What is DSB SC modulation? Explain DSB SC modulator.
b. What do you mean by phase modulation and frequency modulation? Derive the relation between them.
c. Explain a PCM communication system using block diagram. What is companding?
d. Explain adaptive delta modulation with the help of block diagram in brief
e. Calculate the signal to noise ratio in frequency modulation and derive the relation for output noise power.

SECTION C

3. Attempt any one part of the following: **7 x 1 = 7**

(a) Explain different methods of generating a single sideband signal.
(b) With the help of block diagram explain radio transmitter and receiver.

4. Attempt any one part of the following: **7 x 1 = 7**

(a) Give a generalized representation of bandwidth for single tone sinusoidal modulating signal of amplitude *Am*frequency $\omega_m(=2\pi f_m)$, carrier amplitude A_c , frequency $\omega_c(=2\pi f_c)$, for both PM and FM. Assume proportionality constant for phase modulation k_p and for frequency modulation k_f .
(b) Explain any two methods of FM generation.

5. Attempt any one part of the following: **7 x 1 = 7**

(a) Explain the concept of Time Division Multiplexing (TDM) and Frequency Division multiplexing (FDM) using Pulse Amplitude Modulation.
(b) Explain PWM generation and PPM generation from PWM and their principle of generation.

6. Attempt any one part of the following: **7 x 1 = 7**

(a) Explain the basic principle of differential PCM .What is the need for predictor in differential PCM
(b) Explain frequency domain representation of noise and the effect of filtering on probability density of Gaussian Noise.

7. Attempt any one part of the following: **7 x 1 = 7**

(a) Explain Pre-emphasis and De-emphasis in a FM system.
(b) Give the block diagram representation of a PLL and analyze the output voltage,operating range and bandwidth of the PLL.