

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

PAPER ID : 3085

Roll No.

--	--	--	--	--	--	--	--	--	--

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION
2010-11

PRINCIPLE OF COMMUNICATION*Time : 3 Hours**Total Marks : 100***Note : Attempt all questions. All questions carry equal marks.**

1. Attempt any four out of the following : (5×4=20)
 - (a) What is Vestigial side band and how is it different from SSB transmission ?
 - (b) Why over modulation is undesirable in amplitude modulation system ?
 - (c) Compare the features of AM/FM and PM signal.
 - (d) State the channel capacity theorem.
 - (e) Draw the plot for total power transmitted versus carrier power of an AM signal and give your comments briefly.
 - (f) What is the function of Noise limiter ?

2. Attempt any four out of the following : (5×4=20)
 - (a) A modulating signal $5 \cos 2\pi 15 \times 10^3 t$ angle modulates a carrier $A \cos(\omega_c t)$. Find the modulation index and bandwidth for (i) F.M. system, (ii) P.M. system.
 - (b) Explain the detection of F.M. signal by Foster Sealy discrimination method. Give suitable phasor diagram.
 - (c) What is effect of modulation index β , in the spectrum of frequency modulation ? Hence explain the significance of Carson's rule in B.W. of F.M. signal.

- (d) Explain the demodulation technique Pulse width modulation and Pulse modulation.
- (e) Given the spectral analysis of PAM, PWM and PPM signal. Compare SNR for such pulse analog modulation system.
- (f) Compare the F.D.M. and T.D.M. technique.
3. Attempt any **two** out of the following : **(10×2=20)**
- (a) Explain the different types of noise in detail.
- (b) Distinguish between Narrow band F.M. and Wide band F.M. with their basic equations.
- (c) Write short notes on external noise versus internal noise.
4. Attempt any **two** out of the following : **(10×2=20)**
- (a) What is narrow band noise and how it is represented mathematically ?
- (b) Write short notes on amplitude modulated system versus angle modulated system.
- (c) Explain the concept noise triangle with respect to frequency modulation.
5. Attempt any **two** out of the following : **(10×2=20)**
- (a) Derive the expression for the addition of noise due to several amplifier in cascading.
- (b) Given the method for generation of AM DSBSC signals. How will you demodulate such signals ? Give suitable block/functional diagram with necessary mathematical analysis.
- (c) What is mutual information ? Give any three properties. State and explain Shanon's source coding theorem. How it helps in removing redundancy of source information ?