AGJ 2nd half (v) 7 Academic [illegible]
Sem-V th

T-F.H.Exam. April.-12-142 Branch:- Biomedical

Con. 3850-12. Sub:- Principal of Analog & Digital communication GN-7002

Date:- 18/5/12

(3 Hours) [Total Marks : 100

YTIET/LIB/ENGG/BM/SEM-V/PADC/18 May 2012

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Make **suitable** assumptions wherever **necessary** and **clearly** justify them.

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1. Answer the following any **four** :– 20
   (a) Explain Noise triangle
   (b) Need of modulation
   (c) Explain various types of noises in communication system
   (d) Explain double spotting
   (e) Compare AM with FM.

2. (a) A carrier wave $V_c = 15 \sin(2\pi \times 25 \times 10^3 t)$ is amplitude modulated by an audio signal $V_m = 8 \sin(2\pi \times 3 \times 10^3 t)$. 10
   Modulated voltage is developed across a 50 ohm load.
   (i) Write the expression for the modulated wave. Determine the modulation index.
   (ii) Draw AM waveform and its frequency spectrum.
   (iii) Calculate the total power and the sideband power. How much power saved if SSBSC is generated ?
   (b) Explain with block diagram superheterodyne receiver with waveforms at each stage. 10

3. (a) Explain Indirect method of FM generation. 10
   (b) Explain the block diagram of Adaptive delta modulation with waveforms. How does it reduces slope overload error and granular noise ? 10

4. (a) Explain the working of Foster Seeley discriminator. What is the drawback ? How it is overcome in Ratio detector ? 10
   (b) Explain how PPM is generated from PWM. 10

5. (a) Draw the block diagram of pulse code modulation techniques and explain each block. 10
   (b) State and prove sampling theorem for Low pass signal. 10

6. (a) Explain the working of balanced modulator for DSBSC generation. 10
   (b) What are the advantages of multiplexing techniques ? Explain FDM in detail. 10

7. Write short notes on any **four** :– 20
   (a) Companding Technique
   (b) Compare BASK, BFSK and BPSK
   (c) Automatic Gain Control
   (d) VSB
   (e) Compare Narrowband FM and Wideband FM.

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