Con. 6142–10.   (REVISED COURSE)   GT–6735

(3 Hours)   [Total Marks : 100

N.B. : (1) Question No.1 is **compulsory**.
    (2) Attempt any **four** questions out of remaining six-questions.
    (3) **Figures** to the **right** indicate **full** marks.

1. Answer any Four of the following questions:-   20
    (a) Explain various types of noises in communication system.
    (b) Compare low level modulation and high level modulation.
    (c) Explain noise triangle in FM
    (d) Compare PAM, PWM & PPM.
    (e) What is sampling theorem? Explain various methods of
          sampling.

2. (a) Explain grid modulation with circuit diagram and waveforms.   08
   (b) A carrier wave $V_c = 15 \sin (2\pi \times 25 \times 10^3 \text{ t})$ is amplitude modulated by   12
        an audio signal $V_m = 8 \sin (2\pi \times 3 \times 10^3 \text{ t})$. 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 & its frequency spectrum.
            iii. Calculate the total power and the sideband power.
               How much power is saved if SSBSC is generated?

3. (a) What is angle modulation? Derive the expression for FM.   10
   (b) Explain any one method of generation of FM.   10

4. (a) With a neat block diagram explain the working of super   10
        heterodyne receiver.
   (b) Explain phase shift method of SSB generation.   10

5. (a) Draw the block diagram of Delta Modulator and explain.   12
        What are its drawbacks? How do you overcome them?
   (b) Explain the following:-   08
            i. Quantization ii. Companding

6. (a) Draw the block diagram of BPSK transmitter, receiver and explain   12
   (b) Explain PCM TDM system in detail.   08

7. Write short note on any **Four**.   20
    (a) Receiver characteristics
    (b) Ring modulator
    (c) Compare Narrowband FM and Wideband FM
    (d) Noise factor of amplifiers in cascade
    (e) AM demodulation

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