T.E. - V - Sem. Biomedical

18/11/15

11/2015 Principles of Communication Engineering

(15) TE/Bm/V/CBGS/PCE

Q.P. Code : **5573**

(3 Hours) [Total Marks : 80

N.B. : (1) Question No. 1 is compulsory.
(2) Attempt any three questions out of the remaining five questions.
(3) Figures to the right indicate full marks.
(4) Assume suitable data wherever necessary.

1. Answer any four :- 20
   (a) Noise Triangle
   (b) Companding
   (c) Types of noise
   (d) Difference in AM and FM.
   (e) Time Division Multiplexing.

2. (a) An AM transmitter supplies a 15kw carrier power to 100Ω Load. It is 70% modulated by 5KHz sine wave. The carrier frequency is 2 MHz. 10
   (i) Sketch the frequency spectrum.
   (ii) Calculate total power.
   (iii) Calculate RMS voltage of the AM signal.
   (iv) Calculate peak voltage of the AM signal.
   (v) Calculate transmission efficiency and bandwidth of AM signal.

   (b) Draw block diagram and explain superhetrodyne radio receiver with wave forms on every stage. 10

3. (a) Explain indirect method of FM generation with all diagrams. 10
   (b) Explain pluse code modulation and demodulation with block diagrams and waveforms. 10

4. (a) Explain ASK, FSK and BPSK with respect to difference in waveforms and modulation block diagrams. 10
   (b) Explain DSB-SC by FET balanced modulation technique. 16

5. (a) Draw and explain the block diagram of delta modulation. Write about its problems and how to overcome them. 10
   (b) Explain in detail foster seeley ratio detector with phasor diagrams. 10

6. Write short note on (any four) 20
   (a) AGC with practical diode detector.
   (b) Any one technique to get SSB.
   (c) Derive expression for AM wave.
   (d) Pulse width modulation block diagram and waveforms.
   (e) TDMA.

MD-Con. 6899-15.