Q.P.Code: 39182

(3 Hours) **Total Marks : 80**

N.B. (1) Question No. 1 is compulsory.

(2)Attempt any three questions out of remaining five.

(3)Figures to the right indicate full marks.

(4)Assume suitable data if required and mention the same in answer sheet

1. Solve any four **20**

(a) Modulation Index for AM should be less than one. Justify/Contradict.

(b) What is aliasing? How it can be prevented?

(c) Why AGC is required in radio receivers?

(d) Justify, why FM is more immune to noise?

(e) Define noise figure and noise factor.

2. (a) State and prove sampling theorem for low pass bandlimited signals. **10**

(b) One input to AM modulation is 800 KHz carries with an amplitude of 10 Vp. The second input is 10KHz modulating signal that is of sufficient amplitude to cause a change in o/p wave of ± 5.5Vp. Determine. **10**

i) Upper and lower side frequency

ii) Modulation co-efficient and percent modulation

iv) Draw o/p frequency spectrum

v) Draw modulated wave showing maxima and minima of waveforms

3. (a) Explain the operation of Foster seeley discriminator with the help of circuit diagram and phasor diagram. **10**

(b) Explain the working of stabilized reactance modulator with suitable diagram. **10**

4. (a) With help of neat diagram and waveforms explain generation and demodulation of PWM **10**

(b) Explain phase shift method for suppression of unwanted carrier with neat block diagram. **10**

5. (a) Explain the following with reference to AM receiver **10**

(i) Double spotting

(ii) Three point tracking

(iii) Image frequency rejection ratio

(iv) Fidelity

(b) Explain Indirect FM transmitter with suitable diagram. **10**

6. Write short note on(any four) **20**

(a) Vestigial side band transmission (VSB) and its application.

(b) μ-law and A-law companding

(c) Frequency division Multiplexing (FDM)

(d) Amplitude limiting and thresholding

(e) Pre emphasis and de-emphasis circuits and its need
