Duration: 3hrs

[Max Marks:80]
N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1 Attempt any FOUR
a What is low level and high level modulation?
b Define: a) Signal to Noise Ratio b) Selectivity c) Sensitivity
c Why is VSB amplitude modulation used in television broadcasting?
d What is aperture effect? How to avoid it?
e What is multiplexing? State its advantages.
2 a How is FET reactance modulator capable of generating FM signal? Use neat circuit diagram to explain the same.
b Derive the wave equation for AM wave. Draw the time domain and frequency domain representation of AM wave.

3 a Explain the working of ratio detector as FM demodulator. What are its advantages over balanced slope detector?
b What is sampling? State and prove sampling theorem for low pass signals.

4 a Explain TDM transmitter and receiver block diagram.
b Explain the working of ISB receiver.
5 a Define noise factor and noise figure. Determine the overall noise factor and noise figure for three cascaded amplifiers with the following parameters: A 1 $=3 \mathrm{~dB}, \mathrm{~A} 2=13 \mathrm{~dB}, \mathrm{~A} 3=10 \mathrm{~dB}, \mathrm{NF} 1=10 \mathrm{~dB}, \mathrm{NF} 2=6 \mathrm{~dB}$ NF $3=10 \mathrm{~dB}$
b Explain the working of diode detector. How is practical diode detector different from diode detector?

6 a Explain indirect method of FM generation with the help of relevant phasor diagrams
b Explain DPCM
c Compare PAM, PWM and PPM

