N.B.:  
(1) Question No.1 is Compulsory.  
(2) Attempt any three questions out of remaining five question.  
(3) Assume suitable data if required.

1. Answer the following (Any four):-  
   (a) Explain the concept of equivalent noise temperature.  
   (b) Explain the distortions in diode detector in AM receiver.  
   (c) Explain noise triangle concept in FM.  
   (d) Explain the sampling theorem & aliasing error.  
   (e) Explain the need of Modulation in analog communication.

2. (a) Explain the direct and indirect method of generation of FM signal.  
   (b) Explain the different method of generation of SSB.

3. (a) In superheterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 100. If the IF is 455kHz, calculate:  
       1) The image frequency and its rejection ratio for tuning at 100kHz  
       2) The image frequency and its rejection ratio for tuning at 25MHz.  
   (b) Explain TRF receiver with block diagram also explain TRF sensitivity and TRF selectivity characteristics.

4. (a) Explain the process of quantization in PCM. Determine the signal to noise ratio at the output.  
   (b) "In PCM, SNR can be controlled by transmission bandwidth" Justify. Compare PCM and Delta modulation.

5. (a) Explain the ratio detector with the help of circuit diagram and explain its merits.  
   (b) Explain PAM, PWM, PPM generation and detection.

6. (a) Compare digital signal and analog signal transmission.  
   (b) Derive Friis formulas for noise.  
   (c) Explain the slope overload and granular noise in Delta modulation.  
   (d) Explain FDM with neat block diagram