

**Duration: 3 Hours**

**Marks: 80**

Please check whether you have got the right question paper.

- N.B: 1. Question No 1 is compulsory  
2. Answer any three from the remaining.

1. Attempt any four from the following. **(20)**
  - (a) Draw and explain basic analog communication system.
  - (b) Explain Noise Figure and derive friss formula.
  - (c) Explain Super heterodyne receiver.
  - (d) How to generate PPM.
  - (e) Explain FDM with neat diagram.
  
2.
  - (a) What is thermal noise? Derive the expression for root mean square voltage of thermal noise? **(06)**
  - (b) Explain shot noise. **(04)**
  - (c) Derive the AM expression and explain each term. **(10)**
  
3.
  - (a) Explain Ratio detector with neat diagram. **(10)**
  - (b) State and prove sampling theorem. **(10)**
  
4.
  - (a) Explain ADM Transmitter and receiver with neat block diagrams. **(10)**
  - (b) Explain BPSK generation and detection with neat block diagrams. **(10)**
  
5.
  - (a) Explain line coding with five data formats with examples. **(10)**
  - (b) What is Image signal and how to reject it? Also define selectivity, sensitivity and fidelity of a receiver. **(10)**
  
6. Answer any four **(20)**
  - (a) Need for modulation.
  - (b) State and prove time shifting property of Fourier Transform.
  - (c) Explain any method to generate SSB SC AM.
  - (d) Digital communication with block diagram.
  - (e) Explain BASK generation.