



## Analog Communication (1110)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. From each question attempt **any two** sub questions.
5. Assume suitable data if required.
6. Figures to the right indicate full marks.
7. Solve all units.

### UNIT - I

1. a) Classify CW modulation, Explain communication system. **10**  
b) Derive equation for noise voltage in case of resistor noise. **10**  
c) Three amplifier have following characteristics. **10**  
F1=9dB, F2 = 6dB, F3=4dB, G1=48dB, G2=35dB  
G3=20dB. Calculate overall noise figure and equivalent noise temperature.

### UNIT - II

2. a) Derive equation for DSBFC signal. **10**  
b) Explain phase shift method for SSB generation. **10**  
c) Explain balanced modulator using two non-linear device. **10**

### UNIT - III

3. a) Explain FM generation using FET. **10**  
b) Draw pre emphasis and de-emphasis curve and explain same. **10**

- c) A equation for FM is given by 10  

$$v(t) = 5 \sin(6 \times 10^7 + 4 \cos 1000t)$$
 Calculate :  
 i) Carrier frequency.  
 ii) Modulating frequency.  
 iii) M.I.  
 iv) Maximum deviation.  
 v) Power developed across  $30\Omega$  resistor.

**UNIT - IV**

4. a) Explain AM receiver. 10  
 b) Draw circuit for Amplitude limiter and explain it. 10  
 c) i) When a superheterodyne receiver is tuned to 555 kHz. mix with 1010 kHz calculate IF. Explain principle of superheterodyne. 10  
 ii) Explain characteristics of receiver.

**UNIT - V**

5. a) Explain TDM. 10  
 b) i) Calculate critical frequency of E layer, if its average density is  $10^{10}$  per cubic meter. If angle of incidence is  $27^\circ$  (Twenty Seven degree). What is MUF ?  
 ii) Define the explain virtual height and critical frequency. 10  
 c) Explain transmission line and coaxial cable. 10

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