



Reg. No. : .....

Name : .....

**Third Semester B.Tech. Degree Examination, January 2016**  
**(2013 Scheme)**  
**13.304 : ANALOG COMMUNICATION (T)**

Time : 3 Hours

Max. Marks : 100

**PART – A**



Answer for **all** questions. **Each** question carries **2** marks.

1. A 400W carrier signal is modulated to a depth of 75 percent. Find the total power in the amplitude modulated wave. Assume the modulating signal to be sinusoidal.
2. Give the mathematical expression for a Single Side Band (SSB) modulated signal.
3. Draw the modulating signal, carrier signal and modulated signals for DSBSC modulation.
4. Define image frequency for a super heterodyne receiver.
5. Give the expression for computing Noise Temperature in terms of Noise Figure.
6. What is threshold effect in envelop detector ?
7. Give the expression for a single tone modulated FM signal and discuss each parameter.
8. Differentiate Narrow band FM from Wide band FM.
9. Give features of Pulse Amplitude Modulation.
10. Define the term 'Erlang' in the case of telephony.

**(10x2=20 Marks)**

P.T.O.



## PART – B

Answer **any one** question from **each** Module. **Each full** question carries **20** marks.

## Module – I

11. a) Explain the working principle of a linear modulator for generating AM signal. 12  
b) What is Individual Side Band (ISB) modulation ? Explain with the help of necessary equations. 8

OR

12. a) Explain the generation of SSB-SC signal using phase shift method, with the help of a neat block diagram and necessary equations. 10  
b) Draw the block diagram of a balanced modulator for generating DSBSC signal and explain with the help of mathematical expressions. 10

## Module – II

13. a) Derive the expression for Figure of Merit (FOM) of DSBSC system. 12  
b) What is AGC ? With a suitable circuit, explain the operation of AGC in super heterodyne receivers. 8

OR

14. a) Explain the working principle of a super-heterodyne receiver with the help of a neat block diagram. 12  
b) Derive the expression for overall Noise Figure (F) of cascaded amplifiers. 8



**Module – III**

- 15. a) Give the block diagram for Armstrong method for FM generation and explain the working. 12
- b) What is Pre-emphasis and De-emphasis ? Explain briefly. 8

OR

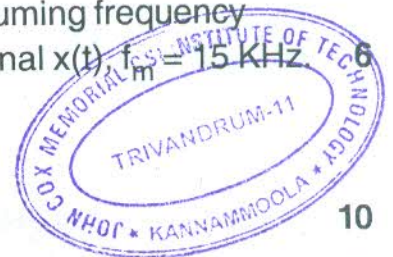
- 16. a) Explain the Foster Seeley Discriminator method for FM demodulation with the help of a neat circuit diagram. 14
- b) Find the bandwidth of commercial FM transmission assuming frequency deviation  $\Delta f = 75$  kHz and bandwidth of modulating signal  $x(t)$ ,  $f_m = 15$  kHz. 6

**Module – IV**

- 17. a) Briefly discuss about the call initiation procedures. 10
- b) Describe the functions of a telecommunication switching system. 10

OR

- 18. a) Give working principle of a crossbar exchange with the help of a neat diagram. 12
- b) What is crosstalk ? Explain briefly. 8



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