

## II B. Tech II Semester Supplementary Examinations, December - 2023

## ANALOG COMMUNICATIONS

(Common to ECE &amp; ECT)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit  
All Questions carry **Equal** Marks

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UNIT-I

- 1 a) Explain how an AM wave can be detected using square law detector. [7M]  
b) A 400W carrier is modulated on a depth of 50%. Calculate the total power transmitted power and sideband power. [7M]

Or

- 2 a) What is Multiplexing? With neat sketch explain FDM. [7M]  
b) Sketch the envelope for a maximum positive envelope voltage of 12V & minimum positive envelope amplitude of 4V; determine the modulation index & percentage modulation. [7M]

## UNIT – II

- 3 a) With neat sketch explain the principle of operation of Costa's loop. [7M]  
b) How is SSB signal generated by Frequency discrimination method? Explain with neat sketch. [7M]

Or

- 4 a) With the help of waveforms and spectrum, describe the concept of SSB-SC both in time domain and frequency domain. [7M]  
b) Compare AM, DSB-SC and SSB-SC. [7M]

## UNIT – III

- 5 a) Explain the detection of FM wave using PLL. [7M]  
b) Determine the Bandwidth occupied by a sinusoidal frequency modulated carrier for which the modulation index is 2.4 and modulating signal frequency is 3KHz. [7M]

Or

- 6 a) Give the procedure to determine the effective bandwidth of FM signal. [7M]  
b) Compare Narrow band and wide band FM. [7M]

## UNIT – IV

- 7 a) Draw the reactance modulated FM transmitter and explain its operation. [7M]  
b) Define receiver and how they are classified. Mention the drawbacks of Tuned Radio Frequency Receiver. [7M]

Or



- 8 a) Draw the block diagram of AM transmitter using low level modulation. Explain the significance of each block. [7M]  
b) Compare FM Receiver with AM Receiver. [7M]

**UNIT – V**

- 9 a) Derive the expression for figure of merit of SSB system for small noise case. [7M]  
b) Draw the circuit for PPM modulation and explain its operation in detail. [7M]

**Or**

- 10 a) Define noise and also write a brief note on noise. [7M]  
b) With a block diagram explain the operation of TDM. [7M]

