Code No: R2022043 **R20** **SET - 1**

II B. Tech II Semester Supplementary Examinations, December - 2022

ANALOG COMMUNICATIONS

(Common to ECE & 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) What is modulation? Explain in detail the need for modulation. [7M]

b) An AM transmitter has an un-modulated carrier power of 10KW. Find the total transmitted power when the modulation index is i) 10% ii)50% iii) 100%. Comment on the result obtained. [7M]

Or

2 a) Explain how an AM wave is generated using switching modulator. [7M]

b) A broadcast AM transmitter radiates 50KW of carrier power. What is radiated power and Total Current at 80% modulation. [7M]

UNIT – II

3 a) Explain about Coherent Detection of DSB-SC. [7M]

b) How is SSB signal generated by Phase discrimination method? Explain with neat sketch . [7M]

Or

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

b) What is VSB? How is it used in TV broadcast? [7M]

UNIT – III

5 a) Describe the generation of FM carrier by transistor reactance modulator with necessary diagrams. [7M]

b) Give the procedure to generate PM from frequency modulator with neat block diagram. [7M]

Or

6 a) A single tone modulating signal $\cos(10\pi 10^3 t)$ frequency modulates a carrier of 10MHz and produces a frequency deviation of 75kHz. Find [7M]
   i. the modulation index and
   ii. phase deviation produced in the FM wave

b) Compare FM and AM systems. [7M]

UNIT – IV

7 a) What is significance of Pre-emphasis and De-emphasis? Explain with neat sketch. [7M]

b) Draw the circuit of amplitude limiter and with the aid of the transfer characteristics. [7M]

Or
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8 a) Define Transmitter. Classify radio transmitters based on the type of modulation and Service involved. [7M]

b) What is tracking error? Explain two point and three point tracking methods. [7M]

UNIT-V

9 a) Derive the expression for figure of merit of DSB-SC system for small noise case. [7M]

b) Draw the circuit for PWM demodulation and explain its operation in detail. [7M]

Or

10 a) The threshold level for AM is equivalent to the input SNR, $(S/N)_i$= 10. Assume this is also valid for FM. Determine the output SNR at the threshold level for FM. [7M]

b) Define pulse amplitude modulation, draw the waveform, and explain the Generation and Demodulation of PAM. [7M]