

Code No: 134AC

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, July/August - 2021

ANALOG COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) With a neat Sketch, generate DSB-SC signal with the help of ring modulator using diodes.
- b) What is the significance of double side band suppressed carrier modulation? Explain with time domain description. [10+5]
- 2.a) Explain the coherent detection of DSB-SC wave.
- b) Explain the detection of message signal from the amplitude modulated signal using an envelope detector and bring out the significance of RC time constant. [7+8]
- 3.a) Explain in detail about frequency discrimination method of AM SSB-SC generation.
- b) Derive an expression for SSB-SC wave using the concept of pre-envelope. [8+7]
4. What is vestigial side band? Explain the process of generation and detection of VSB modulated wave using a carrier $A_c \cos 2\pi f_c t$. [15]
- 5.a) Explain in detail about FM demodulation using PLL.
- b) Discuss the indirect method of generating a wide-band FM signal. [8+7]
- 6.a) Derive the expression for figure of merit of AM system for large case.
- b) The carrier amplitude of 1 volt, RMS is available at the input of envelope detector, along with the noise PSD of 10^{-3} watts/Hz. If the carrier is modulated to a depth of 100% and message B.W, $W=3.2$ KHz, then determine $(SNR)_0$. Derive the relation used. [8+7]
7. What can be done to improve the overall limiting performance of an FM receiver? Explain the operation of the double limiter and also AGC in addition to a limiter. [15]
- 8.a) Explain the demodulation procedure for PWM signal demodulation.
- b) Explain how different signals can be multiplexed using TDM system. [8+7]

---ooOoo---