**R16**

SET - 1

**II B. Tech II Semester Supplementary Examinations, April - 2021**
**ANALOG COMMUNICATION**
(Electronics &Communication Engineering)

Time: 3 hours                                                                                   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

## PART –A

1. a) Why frequency translation is required?  (2M)

   b) Give the advantages for Single sideband suppressed-carrier modulation and give the methods of generating SSB-SC-AM.  (3M)

   c) Define the term modulation index for AM and FM and derive the formula for instantaneous value of FM voltage.  (2M)

   d) Draw the block diagram of super heterodyne receiver.  (2M)

   e) Calculate the thermal noise power appearing across a 20k$\Omega$ resistor at $250^0$ C temperature with an effective noise bandwidth of 10kHZ.  (3M)

   f) Explain simple and delayed AGC.  (2M)

## PART -B

2. a) List Application of different AM systems?  (4M)

   b) For an AM DSBFC wave with peak unmodulated carrier voltage Vc=10Vp, a load resistance $R_L$= 10 $\Omega$ and a modulation coefficient m = 1. Determine a) Power of carrier, upper and lower side band b) Total power of modulate wave c) Total sideband power d) Draw the  spectrum.  (10M)

3. a) With a neat diagram explain how a SSB wave is generated using Phase Discriminator method with only USB and rejecting the LSB.  (7M)

   b) Explain the phase discrimination method for generating SSB.  (7M)

4. Explain the principle of Angle Modulation. Derive and explain phase deviation, Modulation index, frequency deviation and percent modulation.  (14M)

5. a) Draw the block diagram of double conversion FM receiver and explain.  (8M)

   b) What do you mean by pulse modulation and define types of pulse modulation?  (6M)

6. a) Draw and explain the pre-emphasis and de-emphasis circuits with a neat diagram. What is their function?  (8M)

   b) Define noise figure and explain its significance with derivation.  (6M)

7. a) Compare PAM, PWM and PPM systems.  (6M)

   b) With a block diagram approach explain the operation of FDM scheme  (8M)

||''|'''|''|'|''''||