EC 312 (R-20)

Total No. of Questions : 10] [Total No.of Pages : 02

III/IV B. Tech. DEGREE EXAMINATIONS, DECEMBER - 2022

First Semester

ELECTRONICS AND COMMUNICATIONS ENGINEERING

ANALOG COMMUNICATIONS

Time : **Three Hours** Maximum : **60** Marks

Answer ONE question from each Unit.

All questions carry equal marks. 5x12=60 M

UNIT - I

1. a) What is modulation index ? Explain its significance.

   b) With neat block diagram explain the demodulation process of DSB - SC signal.

(OR)

2. a) Describe an expression for AM wave and sketch its frequency spectrum.

   b) Explain about Quadrature - Carrier multiplexing ?

UNIT - II

3. a) Explain the principle of VSB transmission and list the advantages over SSB ?

   b) The efficiency of an AM wave is defined by $\eta = (Ps/Pt) \times 100$. Find the efficiency for $\mu = 0.5$

(OR)

4. a) Explain about FDM technique.

   b) Discuss about Pre-envelope and Natural envelope ?

UNIT - III

5. a) Explain about pre-emphasis and de-emphasis in FM system ?

   b) Discuss about zero-crossing detecto ?

(OR)

6. An angle modulated signal has the $V(t) = 100 \cos [2\pi fct + 4 \sin 2000\pi t)$ where fc = 5 MHz.

   (i) Determine the average transmitted power.

   (ii) Determine the peak phase deviation.

   (iii) Find the peak frequency deviation.

   (iv) Is this FM (or) a PM signal ? Explain.

P.T.O.

UNIT - IV

7. a) Draw the circuit of PPM demodulator and explain the operation.

   b) Explain the superhetrodyne receiver and the function of each block.

(OR)

8. a) Describe the synchronization procedure for PAM, PWM and PPM signals.

   b) Write short notes on

      (i) Shot noise.

      (ii) Noise figure.

UNIT - V

9. a) Distinguish between simple AGC and delayed AGC.

   b) Explain about AM transmitter ?

(OR)

10. a) Explain receiver characteristics in detail ? List the advantages of SHR over TRF receiver?

    b) Explain the function of following :

       (i) Frequency diversity.

       (ii) Choice of IF.