Total No. of printed pages = 3

19/3rd Sem/DECE301

2021

PRINCIPLES OF ELECTRONIC COMMUNICATION

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Fill in the blanks : $1\times3+2\times2=7$

(i) Frequency of a signal having time period 1us is equal to _____ Hz.

(ii) Frequency of sin $1002\pi t$ is _____.

(iii) Peak amplitude of sinwt is _____.

(iv) In case of amplitude modulation _____ of the carrier signal remains constant and _____ of the carrier signal is varied.

[Turn over

(v) In case of frequency modulation _____ of the carrier signal remains constant and _____ of the carrier signal is varied.

(b) (i) What is modulation and why modulation is required ? 1+3=4

(ii) Describe amplitude modulation with drawing of modulating, carrier and amplitude modulated signal . 4+3=7

(c) Draw the frequency spectrum of Amplitude modulation. 2

2. (a) Draw the block diagram of communication system and describe the functionality of each block. 3+6=9

(b) Describe frequency modulation with drawing of modulating, carrier and frequency modulated signal. 4+3=7

(c) Compare AM and FM. 4

3. (a) Derive the mathematical expression of amplitude modulation from where frequency spectrum of AM can be direct plotted. 5

(b) Derive the power relation of amplitude modulation. 5

(c) If carrier power is 10 watt and modulation index is 0.5 then calculate total power required to transmit AM signal . 4

(d) Derive frequency modulated signal . 6

4. (a) Describe the method of generating amplitude modulated signal. 10

(b) Describe how balanced modulator generates DSB signal. 10

5. (a) Draw and describe filter method block diagram. 3+5=8

(b) Draw and describe phase shift method block diagram to generate SSB . 12

6. (a) Draw and describe the following : 4×(2+2)=16

(i) PAM (ii) PWM

(iii) PPM (iv) PCM.

(b) Write short note on Bandwidth. 4