PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

MAKE UP EXAMINATION – JAN 2023

Course Code: ECE 210
Course Name:Analog Communications
Programme   :B.Tech

Date: 28-JAN-2023
 Time: 9:30 am to 12:30 pm
Max Marks: 100
Weightage: 50%

Part A[Memory Recall Questions]

Answer **all** Questions. **Each** question carries **TWO** mark.   **(15QX2M=30M)**

1) Which of the following is used to convert PPM into PWM   (C.O.No.4) [Knowledge]

    A) Clipping Circuit

    B) Bi-stable Multi-vibrator

    C) Integrating the PPM signal

    D) Differentiating the PPM signal

2) A PWM signal can be generated by   (C.O.No.4) [Knowledge]

    A) mono-stable Multi-vibrator

    B) Direct FM

    C) Neither of them

    D) Both of them

3) Quantization noise can be reduced by increasing the no. of samples per seconds. It is true

                                                         (C.O.No.4) [Knowledge]

    A) Yes, it is

    B) No, it is

    C) Not necessarily

    D) None of these

4) In pulse modulation, the no. of samples required to ensure no loss of information is given by

(C.O.No.4) [Knowledge]

    A) All of the
    B) Fourier Transform
    C) Parseval's theorem
    D) Nyquist theorem

5) In a super heterodyne radio receiver   (C.O.No.4) [Knowledge]

    A) RF amplifier normally operates at 455 kHz above carrier frequency

    B) mixer input must be tuned to the signal frequency

    C) local oscillator operates below signal frequency

    D) local oscillator frequency is double the IF

6) Transmitter power remains constant in ………. modulation.   (C.O.No.4) [Knowledge]

    A) PAM

    B) PWM

    C) PPM

    D) PTM

7) The VSB wave can be assumed to be generated by a ………..   (C.O.No.2) [Knowledge]

    A) Side band shaping filter along with DSBSC

    B) Side band shaping filter along with FM

    C) Side band shaping filter along with AM

    D) Side band shaping filter along with SSB

8) Which Modulation technique requires High Power   (C.O.No.1) [Knowledge]

    A) Standard AM

    B) DSBSC

    C) SSB

    D) VSB

9) Which Modulation technique requires LowPower   (C.O.No.2) [Knowledge]

    A) Standard AM

    B) DSBSC

    C) SSB

    D) VSB

10) Which Modulation technique has maximum transmission efficiency   (C.O.No.2) [Knowledge]

    A) Standard AM

    B) DSBSC

    C) SSB

    D) VSB

11) Which Modulation technique is related to Nonlinear type   (C.O.No.1) [Knowledge]

    A) Standard AM

    B) DSBSC

    C) SSB

    D) VSB

12) Demodulation of FM with frequency discrimination method uses   (C.O.No.3) [Knowledge]

    A) clamped circuit

    B) Biased circuit

    C) Bypass circuit

    D) Tuned Circuit

13) Multi-vibrator used in zero crossing detector is   (C.O.No.3) [Knowledge]

    A) Tri-stable

    B) Bi-stable

    C) Quasi Mono stable

    D) Mono stable

14) AM spectrum consists of   (C.O.No.1) [Knowledge]

    A) Carrier frequency

    B) Upper sideband

    C) Lower sideband

    D) Carrier frequency with both upper and lower sideband

15) Single-tone amplitude modulation consists of   (C.O.No.1) [Knowledge]

    A) A large number of frequency components

    B) Only one frequency component

    C) No frequency components

    D) infinite number of frequency components

Part B[Thought Provoking Questions]

Answer **all** Questions. **Each** question carries **TEN** marks.   **(4Qx10M=40M)**

16) A Zero Crossing Detector Circuit is used to track the changing in the sine/pulse waveform from positive to negative or vice versa while it crosses Zero voltage. With a neat block diagram and waveform show zero cross detector for frequency demodulation.

(C.O.No.3) [Comprehension]

17) Explain Pulse Amplitude Modulation with neat block diagram and waveform.

(C.O.No.4) [Comprehension]

18) Derive the expression for single tone modulation frequency Modulation.

(C.O.No.3) [Comprehension]

19) With neat diagram and waveforms explain detection of message signal from amplitude modulated signal using envelop detector and bring out the significance of RC time constant.

(C.O.No.1) [Comprehension]

Part C [Problem Solving Questions]

Answer **all** Questions. **Each** question carries **FIFTEEN** marks.   **(2Qx15M=30M)**

20. The modulating signal is a single sinusoid given by m(t)=2cos(1000πt). Sketch (frequency domain) the corresponding DSBSC and SSBSC signals for a carrier frequency of 15KHz.

(C.O.No.2) [Comprehension]

21. The equation of an amplitude modulated wave is given as V=100[1+0.2cos(2πX1000t)]cos(2πX1000000t) find all frequencies present and their respective amplitude(need to plot frequency spectrum) also determine the value of modulation index.

(C.O.No.1) [Comprehension]