Reg. No. : ....

Code No. : 10314 E   Sub. Code : AEPH 52

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2023.

Fifth Semester

Physics

Major Elective – COMMUNICATION ELECTRONICS

(For those who joined in July 2020 only)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks).

Answer ALL questions.

Choose the correct answer :

1. A modulation index of 0.5 would be same as
    _____.

    (a)   0.5 of modulation depth

    (b)   1/2% of modulation depth

    (c)   5% of modulation depth

    (d)   50% of modulation depth

2. How can the noise be reduced in AM signal?

    (a)   increasing amplitude

    (b)   increasing wavelength

    (c)   increasing bandwidth

    (d)   increasing frequency deviation

3. Super heterodyne receivers _____.

    (a)   have high selectivity

    (b)   have better sensitivity

    (c)   need extra circuitry for frequency conversion

    (d)   all the above

4. Identify the type of modulation where the frequency of the modulated wave is equal to that of the carrier wave

    (a)   frequency modulation

    (b)   amplitude modulation

    (c)   carrier modulation

    (d)   phase modulation

5. Input signal in phase modulation changes according to _____ of a carrier wave.

    (a)   amplitude   (b)   phase

    (c)   frequency   (d)   time

6. Advantage of using direct method for generation of FM signal is _____.

   (a) It gives high stability to FM signal frequency

   (b) Distortion free FM signal is generated

   (c) High power FM generation is possible

   (d) None

7. What is the reason for using pre-emphasis?

   (a) increase amplitude

   (b) reduce carrier shift

   (c) amplify RF signal

   (d) reduce noise reception

8. Amplitude limiter in FM receivers are used to remove _____ variation due to noise.

   (a) frequency   (b) amplitude

   (c) phase   (d) none

9. BPSK signal can be demodulated by using

   (a) high pass filters

   (b) band pass filters

   (c) loss pass filters

   (d) none

10. In duobinary signaling method, for m-ary transmission, the number of output obtained is _____.

    (a) 2 M   (b) 2 M+1

    (c) 2 M–1   (d) M2

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain the three degrees of modulation in AM wave.

    Or

    (b) Describe a collected modulator.

12. (a) Compare the various AM systems.

    Or

    (b) Explain the parameters of radio receiver set.

13. (a) Define phase modulation. Derive an expression for instantaneous voltage and modulation index of phase modulation.

    Or

    (b) Explain commercial broadcast FM.

14. (a) Explain the operation of Foster-Seely discriminator. Discuss its frequency response curve.

Or

(b) Define FM threshold. Explain a threshold FM demodulator with negative feedback.

15. (a) Explain binary phase shift keying.

Or

(b) Compare the performance of different digital modulation schemes.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the frequency spectrum and bandwidth of AM wave.

Or

(b) Describe single side band suppressed carrier AM. Explain the phase shift method of generating it.

17. (a) Describe the various parts of AM receiver using a block diagram.

Or

(b) Describe the principle and working of double frequency conversion AM receiver.

18. (a) Explain with the help of vector diagrams, the phasor representation of FM and PM.

Or

(b) Describe the indirect method of FM generation.

19. (a) Explain a FM super heterodyne receiver.

Or

(b) Draw and explain the operation of ratio detector.

20. (a) Explain Quadrature phase shift keying.

Or

(b) Describe M-ary FSK system. Write its specific advantage and disadvantage.

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