(6 pages)

Reg. No. :.....

Code No. : 20314 E **Sub. Code : AEPH 52**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 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. AM spectrum consists of
   (a) Upper side band frequency
   (b) Lower side band frequency
   (c) Carrier frequency
   (d) All the above

2. If the frequency of the signal is 20 kHz, the length of the antenna is _____.
   (a) 8.85 km (b) 3.75 km
   (c) 3.65 km (d) 3.95 km

3. In a radio receiver, noise is generally developed at
   (a) IF stage (b) Receiving antenna
   (c) Audio stage (d) RF stage

4. One of the following types of noise is of importance at high frequencies.
   (a) shot noise (b) impulse noise
   (c) random noise (d) transit noise

5. In FM, the modulation index is
   (a) $\frac{f_d}{f_m}$ (b) $\frac{f_m}{f_d}$
   (c) $\frac{f_c - f_m}{f_m}$ (d) $\frac{f_m}{f_c - f_m}$

6. FM spectrum has
   (a) two side bands
   (b) three side bands
   (c) no side bands
   (d) infinite number of side bands

7. Foster seely discriminator is
   (a) Phase stabiliser
   (b) AM detector
   (c) FM detector
   (d) None

8. One of the main function of the RF amplifier in a super heterodyne receive of
   (a) to provide improved tracking
   (b) to permit adjacent channel rejection
   (c) to increase the tuning range
   (d) to improve image frequency rejection

9. Most commonly used digital modulation scheme is
   (a) ASK (b) BFSK
   (c) BPSK (d) DPSK

10. PSK is
    (a) Linear modulation
    (b) Non-Linear modulation
    (c) Complex modulation
    (d) None

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Define modulation index for AM wave.

    Or

    (b) Give the block diagram of AM transmitter and explain the function.

12. (a) Explain the principles of AM detection.

    Or

    (b) Explain TRF receiver.

13. (a) Explain frequency modulation.

    Or

    (b) Compare AM and FM.

14. (a) Define balanced slope detector.

    Or

    (b) Explain FM noise suppression.

15. (a) Explain BFSK.

    Or

    (b) Define and describe duo binary encoding.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain degrees of modulation.

Or

(b) Explain the median and high power AM modulator.

17. (a) What is meant by Superheterodyne? Give the block diagram of a Superheterodyne and explain its function.

Or

(b) Derive an expression for double frequency conversion AM receiver.

18. (a) Explain the conversion of FM to PM.

Or

(b) Describe indirect method of FM wave generation.

19. (a) Explain FM noise suppression.

Or

(b) Draw and explain block diagram of FM Superheterodyne receiver.

20. (a) Explain correlative coding.

Or

(b) Explain duo binary encoding.
