19P406 (Pages: 2) Name: ……………….....

Reg. No……………………..

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2021
(CBCSS - PG)
CC19P PHY4 E14 - COMMUNICATION ELECTRONICS
(Physics - Elective Course)
(2019 Admission - Regular)

Time: Three Hours   Maximum: 30 Weightage

Section A
Answer *all* questions. Each question carries 1 weightage.

1. Write a short on filter method in SSB generation.

2. With a schematic diagram explain how AM signal can be demodulated.

3. What are the performance parameters of a super heterodyne receiver?

4. What is meant by image frequency rejection in receivers?

5. Define the term signal to noise ratio.

6. What is meant by stability in LTI system?

7. Write a short note on ground waves, sky waves and space waves.

8. What is meant by directive gain and directivity of an antenna?

(8 × 1 = 8 Weightage)

Section B
Answer any *two* questions. Each question carries 5 weightage.

9. Explain the working of super heterodyne receiver with neat block diagram. Draw the signals at the output of each block. Explain AGC in AM receivers.

10. How is FM signal demodulated? With neat diagram explain the working of Foster Seeley discriminator.

11. With schematic diagrams explain the theory of PCM with sampling, quantization and coding.

12. Explain in detail the propagation of radio waves through ionosphere.

(2 × 5 = 10 Weightage)

Section C
Answer any *four* questions. Each question carries 3 weightage.

13. A frequency modulated signal which is modulated by a 3KHz sine wave reaches a maximum frequency of 100.02MHz and a minimum of 99.98MHz. Find the carrier frequency, frequency deviation and modulation index.

14. A receiver is tuned to 600KHz and intermediate frequency (IF) of 450KHz. Find local oscillator frequency and image frequency.

15. For a signal $x(t) = 5cos4000\pi t + 6sin8000\pi t - 12cos12000\pi t.$ Find the Nyquist rate for this signal. What are the frequencies of the analogue signal?

16. Explain how Convolution sum between x(k) and h(k) is obtained.

17. Write a note on Analogue to Digital Conversion (ADC)

18. Find out the power radiated by a current element.

19. Find the radiation resistance of a dipole having length of 4cm and is operated at 1GHz.

(4 × 3 = 12 Weightage)

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