Question Paper Code: 44405

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Fourth Semester

Electronics and Communication Engineering

14UEC405 - ANALOG COMMUNICATION

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. If the modulation index of an AM wave is changed from 0 to 1, the transmitted power

   (a) increases by 50%   (b) increases by 75%
   (c) increases by 100%   (d) remains unaffected

2. In a DSB-SC system with 100% modulation, the power saving is

   (a) 50%   (b) 66%   (c) 75%   (d) 100%

3. In wideband FM system, the output signal to noise ratio increases

   (a) Linearly as the bandwidth   (b) as the square root of the bandwidth
   (c) as the square of the bandwidth   (d) as the cube of the bandwidth

4. The signal $cos\omega_c t + 0.5cos\omega_m t sin\omega_c t$ is

   (a) FM only   (b) AM only
   (c) both AM and FM   (d) Neither AM nor FM

5. A random variable is uniformly distributed between 3 and 6. Its variance is

   (a) 0.75   (b) 0.25   (c) 1   (d) 0.5

6. Gaussian process is a

   (a) Wide sense stationary process   (b) Strict sense stationary process
   (c) Both of the mentioned   (d) None of these

7. Threshold for detection of FM signals using discriminator is about

   (a) 100 dB   (b) 30 dB   (c) 200 dB   (d) 1 dB

8. Equalization network is used to

   (a) eliminate non-linear distortion   (b) eliminate quantization
   (c) compensate transmission loss   (d) none of these

9. A Pulse Amplitude Modulation signal may be generated using

   (a) impulse sampling   (b) a sample and hold circuit
   (c) natural sampling   (d) a clipper circuit

10. Time division multiplexing is used in

    (a) Analog circuits   (b) Digital circuits
    (c) Modulation circuit   (d) Multiplier circuits

PART - B (5 x 2 = 10 Marks)

11. Compare AM with DSB-SC and SSB-SC.

12. State the Carson's rule.

13. Define Gaussian processes.

14. What is pre-emphasis and de-emphasis?

15. How is PPM obtained from PWM?

PART - C (5 x 16 = 80 Marks)

16. (a) Draw the block diagram for the generation and demodulation of a VSB signal and explain the principle of operation. (16)

Or

(b) Discus the coherent detection of DSB-SC modulated wave with a block diagram of detector and Explain. (16)

17. (a) Draw the circuit diagram of Foster-Seeley discriminator and explain its working. (16)

Or

(b) Derive the expression for the frequency modulated signal. Explain what is meant by narrowband FM and wideband FM using the expression. (16)

18. (a) State and Prove the properties of Gaussian Process. (16)

Or

(b) (i) Explain the Central limit theorem and comment on the importance of the theorem. (10)

(ii) Distinguish between Strict-Sense Stationary and Wide-Sense Stationary with regard to a random process. (6)

19. (a) Explain about shot noise, thermal noise and white noise process with suitable diagram. (16)

Or

(b) Explain clearly the physical process that lead to the occurrence of threshold in FM receiver and also compare the noise performance in AM and FM system. (16)

20. (a) Explain about pulse amplitude modulation. (16)

Or

(b) Give short notes about time division multiplexing. (16)

————————

44405

44405