

[70]

## Q-1 Multiple Choice Questions.

(10)

1. The very low frequency range extends from \_\_\_\_\_.
  - a) 10-30 KHz
  - b) 30-300 KHz
  - c) 30-300 MHz
  - d) 300-3000 MHz
2. Amplitude modulating voltage signal be given by the expression \_\_\_\_\_.
  - a)  $v_m = 2\pi V_c \cos \omega_m t$
  - b)  $v_m = V_m \cos \omega_m t$
  - c)  $v_c = V_c \cos \omega_c t$
  - d) none
3. Thermal noise power proportional to \_\_\_\_\_.
  - a)  $B^2$
  - b)  $2B$
  - c)  $B$
  - d)  $1/B^2$
4. Barrier potential for Silicon diode is \_\_\_\_\_.
  - a) 5 v
  - b) 0.3 v
  - c) 1.3 v
  - d) 0.7 v
5. Linear diode modulation uses \_\_\_\_\_.
  - a) linear region of dynamic voltage-current characteristics
  - b) Non linear portion of the dynamic characteristics of diode
  - c) Resistive property
  - d) none
6. The function of the RC circuit in the FET modulator is to select \_\_\_\_\_.
  - a) voltage
  - b) reactance
  - c) inductance
  - d) none
7. \_\_\_\_\_ Diode is operate in reverse bias condition.
  - a) germanium diode
  - b) silicon diode
  - c) Varactor
  - d) LED
8. If the antenna is vertical then waves are polarized \_\_\_\_\_.
  - a) horizontal
  - b) circular
  - c) elliptical
  - d) vertical
9. The \_\_\_\_\_ is that part of the radio wave which travels along the surface of earth.
  - a) tropospheric wave
  - b) Space wave
  - c) Surface wave
  - d) none
10. The arrangement consisting two electric poles are known as \_\_\_\_\_.
  - a) monopole
  - b) array
  - c) Dipole
  - d) none



## Q-2 Do as Directed. (Fill in the blanks and True/False)

(08)

1. When the amplitude of the carrier is varied in accordance with the message signal, it is known as amplitude modulation. (True / False)
2. The Very low frequency (VLF) is used in the service like Radar navigation. (True / False)
3. In collector modulation class C amplifier is used? (True / False)
4. Square law diode detector utilizes the linear portion of dynamic current-voltage characteristics of electron devices. (True / False)

5. Barrier potential for germanium diode is \_\_\_\_\_. (0.3 v / 0.7 v)
6. RC capacitive reactance tube behaves as capacitance of value \_\_\_\_\_.  
( $gmCR / Rgm$ )
7. The space propagation is normally used for the frequency above \_\_\_\_\_.  
(100 KHz / 30 MHz)
8. The radiation pattern of the thin linear antenna in plane normal to it \_\_\_\_\_.  
(8 figure / Circular)

**Q-3 Answer in short. (Any Ten)**

(20)

1. Draw the block diagram of General Communication system.
2. Explain Thermal noise.
3. Explain why we need of high carrier frequency in the communication?
4. Why collector modulation is superior to base modulation?
5. Draw the circuit diagram of Linear Diode Detector.
6. Give the classification of square law modulation.
7. What are the primary functions of frequency modulation generator?
8. Mention the methods of frequency modulation.
9. What is the difference between varactor diode and rectifier diode?
10. What are the main two functions of Radio antennas?
11. What is radiation resistance?
12. Give the application of Space wave propagation.



**Q-4 Answer the following question (Any Four)**

(32)

1. Define Amplitude modulation. Derive the expression for the amplitude modulated voltage with necessary diagram.
2. Classify the noise in detail.
3. Draw the circuit diagram of square law diode Modulation and explain in detail.
4. Draw the circuit diagram of square law diode detector and explain in detail.
5. Write a short note on: frequency Modulation using a Varactor Diode.
6. Explain Reactance FET method with necessary diagram and derive an expression for effective capacitive  $C_e$ .
7. Explain surface wave propagation briefly.
8. Explain function and process of antenna action with necessary diagrams.

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(2)