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No. of Printed pages: 2

Sardar Patel University

B.Sc. (semester-III) Examination Nov -2022

Paper Code: US03CELC22

Paper Title: Analog Communication

Date: 21/11/2022; Monday

Time: 10:00 am TO 1:00 pm

Maximum Marks: 70

Q-1 Multiple Choice Questions.

(10)

1. Modulation is done in _____.
a) Transmitter
b) Between transmitter and radio receiver
c) Radio receiver
d) Receiver
2. In amplitude modulation, bandwidth is _____ the audio signal frequency
a) twice
b) thrice
c) four times
d) same
3. The term SNR stand for _____.
a) signal to noise rate
b) signal to noise ratio
c) Strength to noise ratio
d) signal with noise rate
4. Barrier potential for germanium diode is _____.
a) 5 v
b) 0.3 v
c) 1.3 v
d) 0.7 v
5. The function of the RC circuit in the FET modulator is to select _____.
a) Reactance
b) Resistance
c) Capacitance
d) Voltage
6. When the frequency of the ac signal increases the capacitive reactance _____.
a) increases
b) remain same
c) decreases
d) zero
7. _____ Diode is operate in reverse bias condition.
a) Varactor
b) silicon diode
c) germanium diode
d) LED
8. If the antenna is vertical then waves are polarized _____.
a) horizontal
b) vertical
c) elliptical
d) circular
9. Ground waves are also known as _____ as the wave propagates close to the surface of earth.
a) tropospheric wave
b) Space wave
c) Surface wave
d) none
10. The radiation pattern of the thin linear antenna in plane normal to it _____.
a) Circular
b) array
c) elliptical
d) 8 figure

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(P.T.O.)

- Q-2 Answer in short. (Any Ten) (20)**
1. Explain difference between AM & FM.
 2. Why we need high carrier frequency in communication?
 3. Classify the external noise.
 4. Give the classification of square law modulation.
 5. Differentiate Resistance, Reactance and Impedance.
 6. What do you meant by linear diode detector?
 7. Define frequency modulation.
 8. What is meant by reactance tube modulation?
 9. Draw the equivalent circuit of Reactance FET.
 10. What is the application of Space wave propagation?
 11. Explain the basic function of the Antenna.
 12. Explain propagation of EM waves.

Q-3 Write expression for the sinusoidal carrier voltage which has been frequency modulated by another sinusoidal modulating voltage in detail. (10)

OR

Write Expression for the sinusoidal carrier voltage which has been amplitude modulated by another sinusoidal modulating voltage in detail. (10)

- Q-4 A Describe the working of Collector modulation with proper circuit diagram. (05)**
B Describe the working of square law diode modulation with proper circuit diagram. (05)

OR

- A Draw the circuit of a linear diode detector using a simple capacitor filter and describe graphically the detection process perform by the circuit. (05)**
B Describe the working of square law diode demodulation with proper circuit diagram. (05)

- Q-5 A Explain method of frequency modulation, and draw the circuit of an R-C capacitive reactance FET and obtain expression for the effective capacitance C_e offered by FET between drain and source terminals. (05)**
B Draw the circuit of Balance Slope detector and explain its working. (05)

OR

- A Draw the circuit diagram of frequency Modulation using a Varactor Diode and explain it. (05)**
B Explain balance slope detector with necessary diagram. (05)

- Q-6 A Explain function and process of antenna action with necessary diagrams. (05)**
B Explain surface wave propagation briefly. (05)

OR

- A Define equation of Radioactive magnetic field strength due to short doublet. (05)**
B Write short note on space wave propagation (05)