

SEAT No. \_\_\_\_\_

Sardar Patel University

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B.Sc. (semester-III) CBCS Examination Jan.-2021 (NC)

[31]

Subject Code: US03CELC02  
Subject: Analog Communication

Date: 04/01/2021; Monday

Time: 10:00 am to 12:00 pm

Maximum Marks: 70

Q-1

Multiple Choice Questions.

(10)

1. Cosmic noise is caused by \_\_\_\_\_.  
a) solar eruption  
b) distant stars  
c) lightning discharge  
d) industrial discharge
2. The Super high frequency range extends from \_\_\_\_\_.  
a) 3-300 KHz  
b) 3-30 MHz  
c) 30-300 MHz  
d) 3000-30000 MHz
3. Thermal noise power proportional to \_\_\_\_\_.  
a)  $B^2$   
b) B  
c) 2B  
d)  $1/B^2$
4. Barrier potential for silicone diode is \_\_\_\_\_.  
a) 0.3 V  
b) 1.7 V  
c) 7 V  
d) 0.7 V
5. In collector modulation which type of amplifier is used?  
a) Class B  
b) class C  
c) Class AB  
d) None
6. The function of the RC circuit in the FET modulator is to select \_\_\_\_\_.  
a) inductance  
b) reactance  
c) voltage  
d) none
7. Inductive reactance tube using RC network behaves as a inductance of value \_\_\_\_\_.  
a)  $CR/gm$   
b)  $gmCR$   
c) CR  
d)  $1/gm$
8. The radiation pattern of the thin linear antenna in plane normal to it \_\_\_\_\_.  
a) circular  
b) 8 figure  
c) spherical  
d) none
9. The \_\_\_\_\_ is that part of the radio wave which travels along the surface of earth.  
a) Surface wave  
b) space wave  
c) Sky wave  
d) none
10. The arrangement consisting two electric poles are known as \_\_\_\_\_.  
a) monopole  
b) Dipole  
c) array  
d) none

Q-2

Do as Directed. (Fill in the blanks and True/False)

(08)

1. Long distance radio communication possible through the \_\_\_\_\_ propagation.  
(Sky wave / Surface wave)
2. Ultra high frequency range extends from \_\_\_\_\_. (300-3000 MHz / 3-30 MHz)
3. The highest modulation frequency typically used in AM broadcast is \_\_\_\_\_.  
( 5 KHz / 15 KHz)
4. Silicon diode operates in \_\_\_\_\_ bias condition. (Reverse bias / Forward bias)

P.T.O

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5. In Capacitor, The empty space between the plates is filled with a non-conductive material or electric insulator or dielectric region. (True / False )
6. The capacitive reactance is given by  $X_c = 1/2\pi RC$ . (True / False )
7. In Ionosphere propagation during night time D, E, F2 layer is show. (True / False )
8. Any antenna can only transmit a signal. (True / False )

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

**(20)**

1. Explain definition of modulation with equation of carrier voltage.
2. Explain the need of high carrier frequency in the communication?
3. Explain the man made noise.
4. Explain Solar noise.
5. Give the classification of square law modulation.
6. Why collector modulation is superior to base modulation?
7. Give the types of FM detector.
8. Draw the basic circuit of Reactance FET.
9. Draw the a.c. equivalent circuit of Reactance FET.
10. Explain the basic function of the Antenna.
11. What are the main two functions of Radio antennas?
12. Explain ionosphere propagation.

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

**(32)**

1. Define Frequency modulation. Derive the expression for the frequency modulated voltage with necessary diagram.
2. Define Amplitude modulation. Derive the expression for the amplitude modulated voltage with necessary diagram.
3. Describe the working of Collector modulation with proper circuit diagram.
4. Draw the circuit diagram of square law diode detector and explain in detail.
5. Draw the circuit diagram of frequency Modulation using a Varactor Diode and explain it.
6. Explain ratio detector with necessary diagram.
7. Explain function and process of antenna action with necessary diagrams.
8. Explain space wave propagation briefly.

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