NEET REVISION SERIES

COMMUNICATION SYSTEM

Revise Most Important Questions to Crack NEET 2020

Q-1 - 17816772

The ground wave propagation is suitable for radio waves of frequency

(A) up to 2 MHz

(B) from 2 MHz to 20 MHz

(C) from 2 MHz to 30 MHz

(D) None of these

CORRECT ANSWER: A

Q-2 - 10060636

A signal of $5kHz$ frequency is amplitade modulated on a carrue wave of frequency`2MHz . The frequency of the resulant signal is //are

(A) 2005 kHz, 200 kHz and 1995 kHz`

(B)
$2000kHz$ and
$1995kHz$

(C) $2MHzonly$

(D) $2005Hz$ and $1995kHz$

CORRECT ANSWER: A

SOLUTION:

Amplitude modulated wave consists of three frequency

are$\omega_c + \omega_m, \omega, \omega,_c - \omega_m$

I,e

$2005Khz, 2000KHz,$

$1995KHz$

Q-3 - 10969236

Two waves A and B of frequencies 2MHz and 3 MHz, respectively are beamed in the same direction for communication via sky wave. Which one of these is likely to travel longer distance in the ionosphere before suffering total internal reflection?

CORRECT ANSWER: C

SOLUTION:

penetrating power of signal α frequency of signal. So, 3 MHz signal travels longer distance in ionosphere.

Watch Video Solution On Doubtnut App

Q-4 - 11971423

Assertion: The Microwave propagation is better than the sky wave propagation.

Reason: Microwaves have frequency 100 to `3001 GHz, which have very good directional properties.

(A) If both assertion and reason are true and reason is the correct explanation of assertion.

(B) If both assertion and reasion are true but reason is not the correct explanation of assertion.

(C) If assertion is true but reasion is false.

(D) If assertion and reason both are false.

CORRECT ANSWER: A

SOLUTION:

Microwaves have got good directional properties. Due to it, the microwaves can be directed as beam signal in a particular direction, much better than radio waves, because microwaves do not bend around the corners of any obstacle coming in their way.

Watch Video Solution On Doubtnut App

Q-5 - 12017480

Calculate the length of half wave dipole antenna at (a) $30MHz$ (b) $300MHz$ (c) $3000MHz$. What interference do you draw from these results?

SOLUTION:

(a)

$v = 30MHz = 30$
$\times 10^6 Hz$

$$\lambda = \frac{c}{v} = \frac{3 \times 10^8}{30 \times 10^6}$$
$= 10m$

$$l = \frac{\lambda}{2} = \frac{10}{2} = 5m$$

(b)

$v = 300MHz = 300$
$\times 10^6 Hz$

$= 3 \times 10^8 Hz$

$$l = \frac{\lambda}{2} = \frac{1}{2}\left(\frac{c}{v}\right)$$
$$= \frac{1}{2}\left(\frac{3 \times 10^8}{3 \times 10^8}\right)$$
$= 0.5m$

(c)

$v = 3000MHz = 3000$
$\times 10^6 Hz$

$$3 \times 10^9 Hz$$

$$l = \frac{\lambda}{2} = \frac{1}{2}\left(\frac{c}{v}\right)$$

$$= \frac{1}{2}\left(\frac{3 \times 10^8}{3 \times 10^9}\right)$$

$$= 0.05m$$

We observe that length of dipole antenna

decreases as frequency of transmission is increased.

Watch Video Solution On Doubtnut App

Q-6 - 14157292

How long would it take a radio wave of frequency $6 \times 10^3 \text{ sec}^{-1}$

to travel from mars to the earth, a distance of $8 \times 10^7 km$?

SOLUTION:

Distance to be travelled from mars to earth

$= 8 \times 10^7 km$

$= 8 \times 10^{10} m$

$\because$ Velocity of EM waves $= 3 \times 10^8 m/\sec$

$\therefore$ Time $= \dfrac{\text{Distance}}{\text{Velocity}}$

$= \dfrac{8 \times 10^{10} m}{3 \times 10^8 m/\sec^{-1}}$

$= 2.66 \times 10^2 \sec$

.

Note : Cosmic rays are made of high velocity sub-atomic particle like protons, neutrons etc which enter earth's atmosphere from outer space. They are not EM wave.

Q-7 - 18256247

Assertion (A) Exposure of ultraviolet rays to human causes the skin cancer, disorder and disrupt the immune system.

Reason (R) Carbon tetrachloride is released into air, it rises to atmosphere and deplets the ozone layer.

(A) Both A and R are correct and R is correct explanation of A

(B) Both A and R are connect but R is not the correct explanation of A

(C) A is correct but R is incorrect

(D) R is correct but R is incorrect

CORRECT ANSWER: A

SOLUTION:

Carbon tetrachloride rises to atmosphere and deplete the ozone layer. This depletion of ozone layer increases exposure of UV rays to human being which lead to increases of skin cancer, eye disease and disorder with

discruption of the immune system.

Watch Video Solution On Doubtnut App

Q-8 - 12228092

Which of the following statements are True (T) or False (F)? Mark them and select the answer from the codes given below.

(I) Ozone is not responsible for greenhouse effect.

(II) Ozone can oxidize SO_2 present in the atmosphere to SO_3

(III) Ozone hole is thinning of ozone layer present in stratosphere.

(IV) Ozone is produced in the upper stratosphere by the action of UV rays on oxygen.

(A)

$I = F, II = T, III = T, IV = T$

(B)

$I = T, II = F, III = T, IV = F$

(C)

$I = F, II = F, III$

$= T, IV = T$

(D)

$I = T, II = T, III$

$= F, IV = F$

CORRECT ANSWER: A

SOLUTION:

(I) There are several gases that are even stronger IR absorbers than CO_2.These are CH_4, O_3, N_2 and CFC.

Thus, these gases are responsible for greenhouse effect. Thus, given statement is false.

(II)

$SO_2 + O_3 \rightarrow SO_3$

$+ O_2$

(true)

(III) True

(IV) $O_2 \xrightarrow[\lambda < 2420]{h\nu} 2[O]$

$O_2 + O \rightarrow O_3$ (true).

Q-9 - 10969229

A TV transmission tower has a height of 240 m. Signals broadcast from this tower will be received by LOS communication at a distance of (assume the radius of earth to be $6.4 \times 10^6 m$)

(A) 100 km

(B) 24 km

(C) 55 km

(D) 50 km

CORRECT ANSWER: B::C::D

SOLUTION:

In LOS communication maximum distance upto which a signals can be received from tower is

$$d = \sqrt{2rh}$$
$$= \sqrt{2 \times 6.4 \times 10^6 \times 240}$$

$$55 \times 10^3 m$$
$$= 55km.$$

Watch Video Solution On Doubtnut App

Q-10 - 16267318

The maximum distance upto which TV transmission from a TV tower of height h can be received is proportional to

(A) $h^{1/2}$

(B) h

(C) h

(D) h^2

CORRECT ANSWER: A

Watch Video Solution On Doubtnut App

Q-11 - 14533318

A ground reciver is receiving a signal at (a) 5 MHz, and (b) 100 MHz, transmitted from a ground transmitter at a height of 300 m located at a distance of 100 km, Identify whether it is coming via space wave or sky wave propagation or satellite transponder.

[Radius of earth $\approx 6.4 \times 10^6 m$, $N_{\max}$ of ionosphere $= 10^{12} m^3$]

SOLUTION:

Maximum distance covered by space wave

communication

$$= \sqrt{2rh}$$

$$= \sqrt{2 \times 6.4 \times 10^6 \times 300}$$

$$= 62k$$

Since receiver-transmitter distance is 100 km, this is

ruled out both for 'a' and 'b'

Further, f_c for ionospheric propagation is

$$f_c = 9(N_{\max})^{1/2} = 9$$

$$\times \left(10^{12}\right)^{1/2} = 9MHz$$

so the 'a' signal of 5 MHz $(< f_c)$ comes via ionospheric

mode while the 'b' signal of 100 MHz comes via the

satellite mode.

Q-12 - 10969220

Three waves A,B and C of frequencies 1600 kHz, 5 MHz and 60

MHz, respectively are to be transmitted from one place to another.Which of the following is the appropriate mode of communication?

(A) A is transmitted via space wave while B and C transmitted via sky wave.

(B) A is transmitted via ground wave while, B via sky wave and C via space wave.

(C) B and C are transmitted via ground wave while A is transmiites via sky wave.

(D) B is transmitted vis ground wave while A and C are transmitted via space wave.

CORRECT ANSWER: B

SOLUTION:

Range of frequencies is as follows:

Ground wave : $300Hzto300kHz$

(it may go upto 3 MHz)

sky wave : $300kHzto3MHz$

Space wave :$3MHzto300GHz$.

Watch Video Solution On Doubtnut App

Q-13 - 12017778

A TV tower has a height of $100m$. How much population is

covered by TV broadcast? Given radius of the earth

$= 6.4 \times 10^6 m$ and average density of population $= 10^3 km^{-2}$.

CORRECT ANSWER: $40LAKHS$

SOLUTION:

Here ,

$h = 100m = 0.1km, R$

$= 6.4 \times 10^6 m$

$= 6.4 \times 10^3 km$, Average population density ,

$\rho = 1000 km^{-2}$.

Radius of the area covered on ground by TV

broadcast is $d = \sqrt{2Rh}$

Area covered by TV broadcast ,

$$A = \pi d^2 = \pi 2Rh.$$

Population covered $= \rho A = \rho \pi 2Rh$

$$= 1000 \times \frac{22}{7} \times 2$$

$$\times \left(6.4 \times 10^3\right) \times (0.1)$$

$$= 40.2 \times 10^5$$

$$\approx 40 lakh$$

Watch Video Solution On Doubtnut App

Q-14 - 12929635

A $100m$ long antenna is mounted on a $500m$ tall building. The

complex ca become a transmission tower of waves with λ

(A) ~$400m$

(B) ~$25m$

(C) ~$150m$

(D) ~$2400m$

CORRECT ANSWER: A

SOLUTION:

Length of the building$(l) = 500m$

length of anantenna$(L) = 100m$

Wave length of the wave which can be transmitted is λ

as $L \approx \frac{L}{4} \Rightarrow \lambda = 4L$

$\lambda \approx 4(100) \approx 400m$

Q-15 - 11971131

In short wave communication waves of which of the following frequeuncies will be reflected back by the ionospheric layer having electron density $10^{11} perm^3$?

(A) $18MHz$

(B) $10MHz$

(C) $12MHz$

(D) $2MHz$

CORRECT ANSWER: D

SOLUTION:

The perceived frequency of sky wave for reflection from an ionospheric layer is $v_c = 9n^{\frac{1}{2}}$

where n is the number density of electrons $/m^3$.

Given, $n = 10^{11}/m^3$

$\therefore v_c = 9 \times \left(10^{11}\right)^{\frac{1}{2}}$

$= 2.8MHz \approx 2MHz$

do not satisfy this condition.

Watch Video Solution On Doubtnut App

Q-16 - 16412769

The length of the optical path of two media in contact of length d_1 and d_2 of refractive indices μ_1 and μ_2 respectively, is

(A) $\mu_1 d_1 + \mu_2 d_2$

(B) $\mu_1 d_2 + \mu_2 d_1$

(C) $\dfrac{d_1 d_2}{\mu_1 \mu_2}$

(D) $\dfrac{d_1 + d_2}{\mu_1 \mu_2}$

CORRECT ANSWER: A

Watch Video Solution On Doubtnut App

Q-17 - 12017859

Maximum usable frequency (MUF) in F-region layer is x, when the critical frequency is 60 MHz and the angle of incidence is 70, then x is

(A) 150 MHz

(B) 170 MHz

(C) 175 MHz

(D) 190 MHz

SOLUTION:

$$MUF = v_c \sec i = 60 \times 10^6 \times \sec 70$$

$$= 60 \times 10^6 \times \frac{1}{0.342}$$
$$= 175.43 \times 10^6 Hz$$
$$= 175.43 MHz$$

Watch Video Solution On Doubtnut App

Q-18 - 11971349

An oscillator is producing FM waves of requency $2kHz$ with a variation of $10kHz$. What is modulating index?

(A) 0.20

(B) 5.0

(C) 0.67

(D) 1.5

CORRECT ANSWER: B

SOLUTION:

The formula for modulating index is given by

$$m_f = \frac{\delta}{v_m}$$

$$= \frac{\text{Frequency variation}}{\text{Modulating frequency}}$$

$$= \frac{10 \times 10^3}{2 \times 10^3} = 5$$

Watch Video Solution On Doubtnut App

Q-19 - 12929604

Sinusoidal carrier voltage of frequency $1.5MHz$ and amplitude $50V$ is amplitude modulated by sinusoidal voltage of frequency $10kHz$ producing $50\ \%$ modualtion. The lower and upper side-band frequencies in kHz are

(A) $1490, 1510$

(B) $1510, 1490$

(C) $\frac{1}{1490}, \frac{1}{1510}$

(D) $\frac{1}{1510}, \frac{1}{1490}$

CORRECT ANSWER: A

SOLUTION:

(1) Here,

$f_c = 1.5MHz$

$= 1500kHz$

, $f_m = 10kHz$

Low side band frequency

$= f_c - f_m = 1500kHz$

$- 10kHz = 1490kHz$

Upper side band frequency

$= f_c + f_m = 1500kHz$

$+ 10kHz = 1510kHz$

Watch Video Solution On Doubtnut App

Q-20 - 10969225

Which of the following frequencies will be suitable for beyond the horizon communication using sky waves?

(A) 10 kHz

(B) 10 MHz

(C) 1 GHz

(D) 1000 GHz

CORRECT ANSWER: B

SOLUTION:

Beyond horizon, a signal can reach via ionospheric reflection or sky wave mode. Frequency range suitable is 3 MHz to 30 MHz.

In an FM system a $7kHz$ signal modulates $108MHz$ carrier so that frequency deviation is $50kHz$. The carrier swing is

(A) 7.143

(B) 8

(C) 0.71

(D) 350

CORRECT ANSWER: A

SOLUTION:

Carrier swing

$$= \frac{\text{Frequency deviation}}{\text{Modulating frequency}}$$

$$= \frac{50}{7} = 7.143$$

Q-22 - 12017498

What is the value of frequency at which an e.m. wave must be propagated for the D - region to have a refractive index of 0.49 ? Electron density for D-layer is $10^9 m^{-3}$.

SOLUTION:

Here,

$\mu = 0.49, N$

$= 10^9 m^{-3}, v = ?$

As

$$\mu_r = \frac{\mu}{\mu_0}$$

$$= \sqrt{1 - \frac{81.45N}{v^2}}$$

$\therefore 0.49$

$$= \sqrt{1 - \frac{\left(81.45 \times 10^9\right)}{v^2}}$$

or

$$0.24 = 1 - \frac{81.45 \times 10^9}{v^2}$$

or

$$v = \left(\frac{81.45 \times 10^9}{1 - 0.24} \right)^{1/2}$$

$$= 3.27 \times 10^5 Hz$$

.

Watch Video Solution On Doubtnut App

Q-23 - 15880072

For a broadcasted electromagnetic wave having frequency of 1200 kHz, calculate number of waves that will be formed in 1 km distance (wave number per km).

CORRECT ANSWER: 4

Watch Video Solution On Doubtnut App

Q-24 - 14162527

The frequencies of electromagnetic waves employed in space communication lie in the range of -

(A) 10^4 Hz to $10^7 Hz$

(B) 10^4 Hz to 10^{11} Hz

(C) 1 Hz to $10^4 Hz$

(D) 1 Hz to 10^{11} Hz

CORRECT ANSWER: B

Watch Video Solution On Doubtnut App

Q-25 - 12929526

Advantage of HF transmission is

(A) that the length of antenna is small

(B) that the antenna can be mounted at larger heights

(C) that the power radiated is more for a given length of antenna

(A) a & b

(B) b & c

(C) a & c

(D) a, b & c

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-26 - 11971321

If μ and μ_2 are the refractive indices of the materials of core and cladding of an optical fibre, then loss of light due to its leakage can

be minimised by having

(A) $\mu_1 > \mu_2$

(B) $\mu_1 < \mu_2$

(C) $\mu_1 = \mu_2$

(D) None of these

CORRECT ANSWER: A

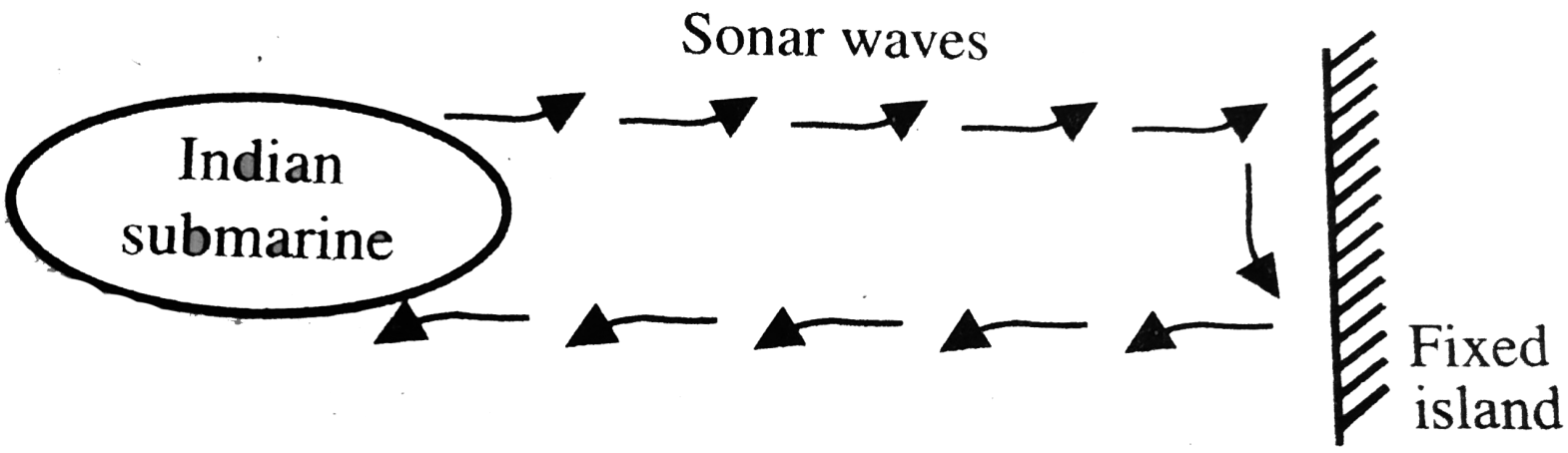
Watch Video Solution On Doubtnut App

Q-27 - 11393618

An indian submarine is moving in the Arabian sea with constant velocity. To detect enemy it sends out sonar waves which travel with velocity $1050\frac{m}{s}$ in water. Initially the waves are getting reflected from a fixed island and the reflected waves are coming back to submarine. The frequency of reflected waves are detected

by the submarine and found to be $10\ \%$ greater than the sent waves. Now an enemy ship comes in front, due to which the frequency of reflected waves detected by submarine becomes $21\ \%$ greater than the sent waves.

Q. Bulk modulus of sea water should be approximately $\left(\rho =_{water} = 1000 \frac{kg}{m^3}\right)$



(A) $10^8 \frac{N}{m^2}$

(B) $10^9 \frac{N}{m^2}$

(C) $10^{10} \frac{N}{m^2}$

(D) $10^{11} \frac{N}{m^2}$

CORRECT ANSWER: B

SOLUTION:

$$v = \sqrt{\frac{B}{\rho}} \Rightarrow 1050$$

$$= \sqrt{\frac{B}{1000}}$$

$$B = 10^9 \frac{N}{m^2}$$

Watch Video Solution On Doubtnut App

Q-28 - 14162446

An antenna behaves as resonant circuit only when its length is

(A) $\frac{\lambda}{2}$

(B) $\frac{\lambda}{4}$

(C) λ

(D) $\frac{\lambda}{2}$ or integral multiple of $\frac{\lambda}{2}$

CORRECT ANSWER: D

Watch Video Solution On Doubtnut App

Q-29 - 10060283

Consider telecommunication through optical fibres. Which of the following statements is not true?

(A) Optical fibres can be of graded refractive index

(B) Optical fibres are subject to electromagnetic interference from outside

(C) Optical fibres have extremely low transmission loss

(D) Optical fibre may have homogeneous core with a suitable cladding

---

CORRECT ANSWER: B

SOLUTION:

Optical fibres form a dielectric wave guide and are free from electromagnetic interference or radio frequency interference.

Watch Video Solution On Doubtnut App

Q-30 - 11971353

Consider an optical communication system operating at $\lambda = 800nm$. Suppose, only $1\ \%$ of the optical source frequency is the available channel bandwidth for optical communication. How many channels can be accommondated for transmitting audio signals requiring a bandwidth of $8kHz$

(A) 4.8×10^8

(B) 48

(C) 6.2×10^8

(D) 4.8×10^5

CORRECT ANSWER: A

SOLUTION:

Optical source frequency $f = \frac{c}{\lambda}$

$= 3 \times 10^{8}$

$/ \left(800 \times 10^{-9}\right) = 3.8$

$\times 10^{14} Hz$

Bandwidth of channel ($1\ \%$ of above)

$= 3.8 \times 10^{12} Hz$

Number of channels = (Total bandwidth of channel

)/(Bandwidth needed per channel)

$\Rightarrow$ Number of channels for audio signal

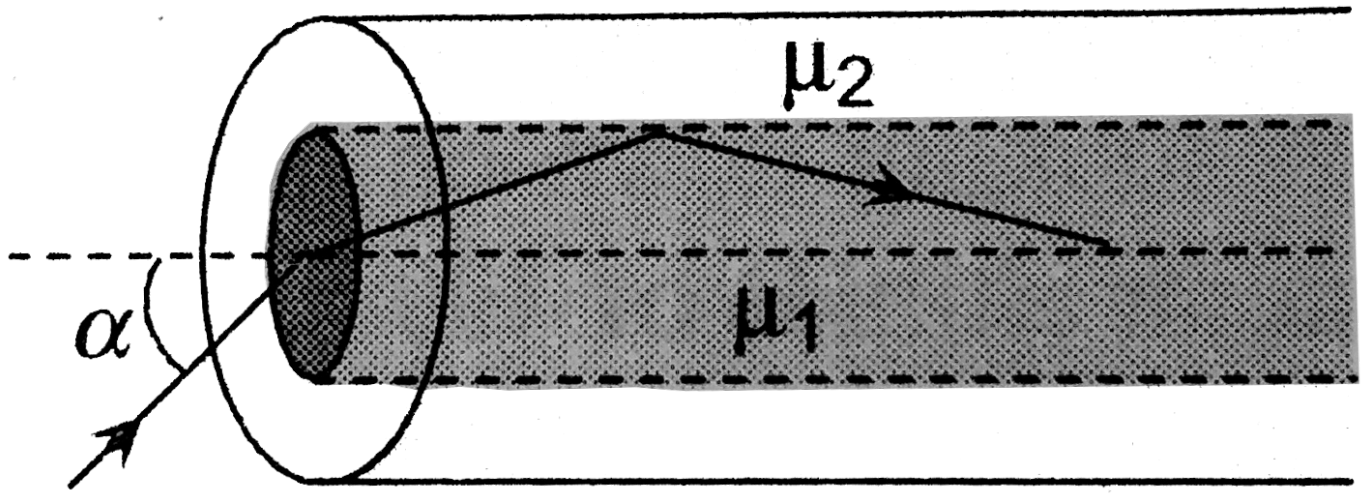
$= \left(3.8 \times 10^{12}\right)$

$/ \left(8 \times 10^{3}\right) = 4.8$

$\times 10^{8}$

Q-31 - 11969014

An optical fibre consists of core of μ_1 surrounded by a cladding of $\mu_2 < \mu_1$. A beam of light enters from air at an angle α with axis of fibre. The highest α for which ray can be travelled through fibre is



(A) $\cos^{-1}\sqrt{\mu_2^2 - \mu_1^2}$

(B) $\sin^{-1}\sqrt{\mu_1^2 - \mu_2^2}$

(C) $\tan^{-1}\sqrt{\mu_1^2 - \mu_2^2}$

(D) $\sec^{-1}\sqrt{\mu_1^2 - \mu_2^2}$

CORRECT ANSWER: B

SOLUTION:

Here the requirement is that $i > c$

$$\Rightarrow \sin i > \sin c$$

$$\Rightarrow \sin i > \frac{\mu_2}{\mu_1}$$

$...(i)$

From Snell's law $\mu_1 = \frac{\sin \alpha}{\sin r}$ $...(ii)$

Also in ΔOBA

$r + i = 90 \Rightarrow r$

$= (90 - i)$

Hence from equation (ii)

$$\sin \alpha = \mu_1 \sin(90 - i)$$

$$\Rightarrow \cos i = \frac{\sin \alpha}{\mu_1}$$

$$\sin i = \sqrt{1 - \cos^2 i}$$

$$= \sqrt{1\left(\frac{\sin \alpha}{\mu_1}\right)^2}$$

From equations (i) and (iii)

$$\sqrt{1-\left(\frac{\sin\alpha}{\mu_1}\right)^2}$$

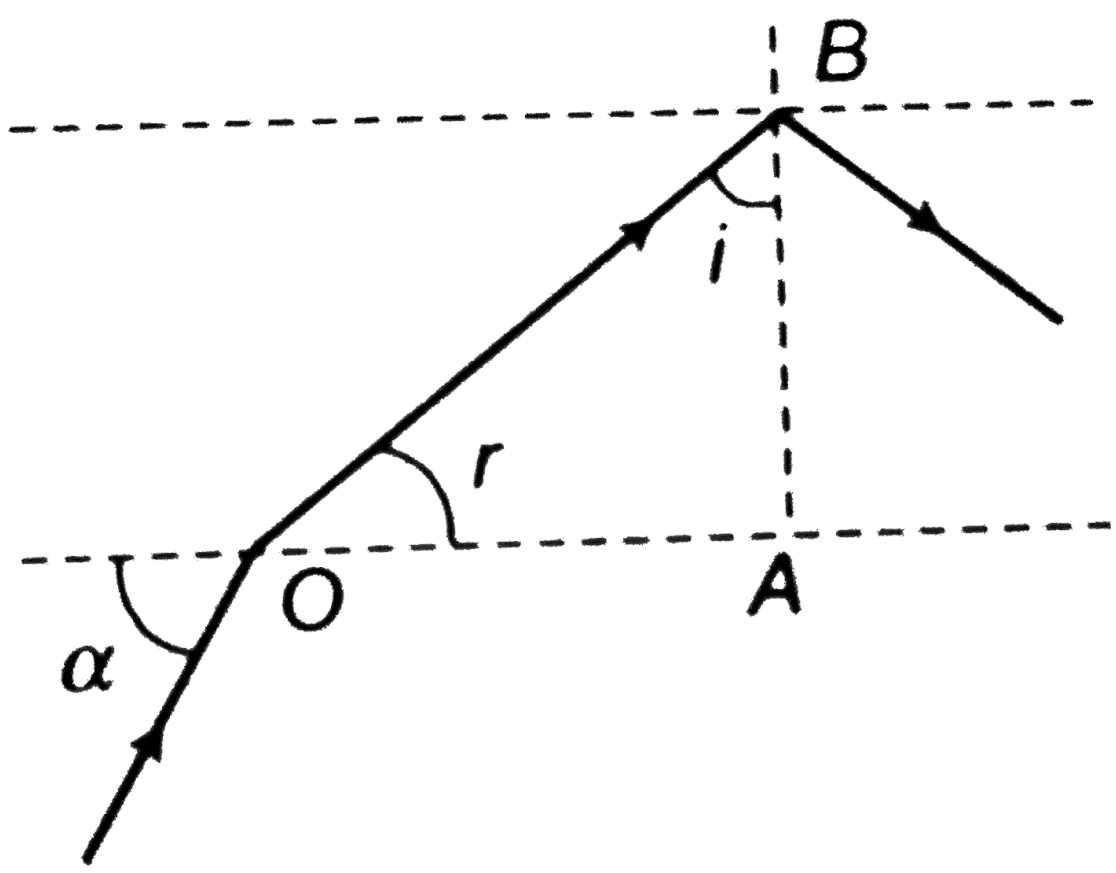
$$> \frac{\mu_2}{\mu_1}$$

$$\Rightarrow \sin^2\alpha < \left(\mu_1^2-\mu_2^2\right)$$

$$\Rightarrow \sin\alpha < \sqrt{\mu_1^2-\mu_2^2}$$

$$\alpha_{\max}$$

$$= \sin^{-1}\sqrt{\mu_1^2-\mu_2^2}$$



Q-32 - 12929637

A speech signal of $3kHz$ is used to modulate a carrier signal of frequency $1MHz$, using amplitude modulation. The frequencies of the side bands will be

(A) $1.003MHz$ and $0.997MHz$

(B) $3001kHz$ and $2997kHz$

(C) $1003kHz$ and $1000kHz$

(D) $1MHz$ and $0.997MHz$

CORRECT ANSWER: A

SOLUTION:

the frequencies of side bands are

$LSB = f_c - f_m$ (Lower side Band)

$USB = f_c + f_m$ (Upper side Band)

Watch Video Solution On Doubtnut App

Q-33 - 14162460

If a number of sine waves with modulation indices n_1, n_2, n_3 modulate a carrier wave, then total modulation index (n) of the wave is

(A) $n_1 + n_2 \text{ } . \\ + 2\left(n_1 + n_2 \text{ } . .\right)$

(B) $\sqrt{n_1 - n_2 + n_3 \text{ } . .}$

(C) $\sqrt{n_1^2 + n_2^2 + n_3^2 \text{ } .}$

(D) none of these

CORRECT ANSWER: C

Watch Video Solution On Doubtnut App

Q-34 - 11971479

For sky wave propagation of a $10MHz$ signal, what should be the minimum electron density in ionosphere?

(A) ~$1.2 \times 10^{12} m^{-3}$

(B) ~$10^{6} m^{-3}$

(C) ~$10^{14} m^{-3}$

(D) ~$10^{22} m^{-3}$

CORRECT ANSWER: A

SOLUTION:

If maximum electron density of the ionosphere is $N_{\max}$ per m^3 then the critical frequency f_c is given by $f_c = 9(N_{\max})^{1/2}$

$$\Rightarrow 1 \times 10^{6}=9(N)^{1 / 2}$$

$$\Rightarrow N=1.2$$

$$\times 10^{12} m^{-3}$$

Watch Video Solution On Doubtnut App

Q-35 - 12929657

In short wave communication waves of which of the following frequencies will be reflected back by the ionospheric layer, having electron density $10^{12} perm^{3}$

(A) $2MHz$

(B) $9MHz$

(C) $12MHz$

(D) $18MHz$

CORRECT ANSWER: B

SOLUTION:

By using $f_c \approx 9(N_{\max})^{\frac{1}{2}}$, $f_c \approx 9\left(10^{12}\right)^{\frac{1}{2}}$

$f_c \approx 9MHz$

Watch Video Solution On Doubtnut App

Q-36 - 12929608

The antenna current of an AM transmitter is $8A$ when only the carrier is sent but increases to $8.96A$ when the carrier is modulated sinusoidally . The percentage modulation is

(A) $50\ \%$

(B) $60\ \%$

(C) $65\ \%$

(D) $71\ \%$

CORRECT ANSWER: D

SOLUTION:

(4) We know that $\left(\frac{I_t}{I_c}\right)^2 = 1 + \frac{m^2}{2}$

Here, $I_t = 8.96A$ and $I_c = 8A$

$\left(\frac{8.96}{8}\right)^2 = 1 + \frac{m^2}{2}$ or $1.254 = 1 + \frac{m^2}{2}$

or $\frac{m^2}{2} = 0.254$ or $m^2 = 0.508$

or $m = 0.71 = 71\ \%$

Watch Video Solution On Doubtnut App

Q-37 - 12017756

When the modulation percentage is 75, an AM transmitter produces to 10kW. How much of this is carrier power?

CORRECT ANSWER: 7.81 KW

Watch Video Solution On Doubtnut App

Q-38 - 14162561

Both amplitude modulation (AM) and frequency modulation (FM) are used for radio broadcasting. The amplitude of the high frequency carrier wave is varied or modulated in accordance with the variations in the amplitude of the audio signals that are to be transmitted, in te process of amplitude modulation in frequency modulation te amplitude of the carrier remains constant but its frequency is varied inn accordance withh the audio signal. Reception with AM signals is in general is affected by interference of various kinds ad elaborated equipment is required for FM broadcast.

The rangeof a transmitter is

(A) less low frequecies

(B) same for all frequencies

(C) less for high frequencies

(D) none of these

CORRECT ANSWER: C

Watch Video Solution On Doubtnut App

Q-39 - 12929614

$C(t)$ and $m(t)$ are used to generate an AM signal. The modulation indes of generated AM signal is 0.5. Then the quantity $\frac{P_{\text{Total } SB}}{P_{\text{Carrier}}} =$

(A) $1/8$

(B) $1/4$

(C) $2/3$

(D) $9/8$

CORRECT ANSWER: A

SOLUTION:

$$\frac{P_{TotalSB}}{P_{Carrier}} = \frac{P_c\left(\frac{m^2}{2}\right)}{P_c}$$

$$= \frac{1}{8}$$