



DPP – 5 (Semiconductor)

Video Solution on Website:-

https://physicsaholics.com/home/courseDetails/63

Video Solution on YouTube:-

https://youtu.be/NH9dQzdNb2Y

Written Solution on Website:-

https://physicsaholics.com/note/notesDetalis/22

- Q 1. If a carrier wave of 1000 kHz is used to carry the signal, the length of transmitting antenna will be equal to
 - (a) 3 m
 - (b) 30 m
 - (c) 300 m
 - (d) 3000 m
- Q 2. If the maximum and minimum voltage of an AM wave are V_{max} and V_{min} respectively then modulation factor –

(a)
$$m = \frac{V_{max}}{V_{max} + V_{min}}$$

$$V_{max} + V_{min}$$

(b)
$$m = \frac{V_{min}}{V_{max} + V_{min}}$$

(c)
$$m = \frac{V_{max} + V_{min}}{V_{max} - V_{min}}$$

(d) m =
$$\frac{V_{max} - V_{min}}{V_{max} + V_{min}}$$

Q 3. Fraction of total power carried by side bands is given by

$$(a) \frac{P_S}{P_T} = m^2$$

(b)
$$\frac{P_S}{P_T} = \frac{1}{m^2}$$

(c)
$$\frac{P_{S}}{P_{T}} = \frac{2+m^{2}}{m^{2}}$$

$$(d) \frac{P_S}{P_T} = \frac{m^2}{2+m^2}$$

- Q 4. For a carrier frequency of 100 kHz and a modulating frequency of 5 kHz what is the width of AM transmission -
 - (a) 5 kHz
 - (b) 10 kHz
 - (c) 20 kHz
 - (d) 200 KHz
- Q 5. A radar has a power of 1 kW and is operating at a frequency of 10 GHz. It is located on a mountain top of height 500 m. The maximum distance upto which it can detect object located on the surface of the earth (Radius of earth = 6.4×10 6 m) is
 - (a) 16 km
 - (b) 40 km
 - (c) 64 km
 - (d) 80 km
- Q 6. **Statement I:** sky wave cannot be observed on moon.

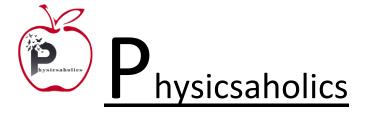
Statement II: Atmosphere of variable refractive index is required for propagation of sky wave.



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- (a) Statement-1 is true, Statement-2 is true; Statement-2 is the correct explanation of Statement-1.
- (b) Statement-1 is true, Statement-2 is true; Statement-2 is not correct explanation of Statement-1.
- (c) Statement-1 is false, Statement-2 is true.
- (d) Statement-1 is true, Statement-2 is false.
- Q 7. In an amplitude modulated wave for audio frequency of 500 cycles/second, the appropriate carrier frequency will be
 - (a) 50 cycle/sec
 - (b) 100 cycle/sec
 - (c) 500 cycle/sec
 - (d) 50000 cycle/sec
- Q 8. The velocity of electromagnetic waves in a nonmagnetic dielectric modium $\epsilon_r = 4$ is
 - (a) 3×10^8 m/s
 - (b) 1.5×10^8 m/s
 - (c) 6×10^8 m/s
 - (d) 7.5×10^8 m/s
- Q 9. The TV transmission tower in Delhi has a height of 240 m. The distance up to which the broadcast can be received, (taking the radius of earth to be 6.4 x 10⁶ m) is
 - (a) 100 km
 - (b) 60 km
 - (c) 55 km
 - (d) 50 km
- Q 10. A diode detector is used to detect an amplitude modulated wave of 60% modulation by using a condenser of capacity 250 pico farad in parallel with a load resistance 100 kilo ohm. Find the maximum modulated frequency which could be detected by it
 - (a) 10.62 MHz
 - (b) 10.62 kHz
 - (c) 5.31 MHz
 - (d) 5.31 kHz
- Q 11. Sinusoidal carrier voltage of frequency 1.5 MHz and amplitude 50 V is amplitude modulated by sinusiodal voltage of frequency 10 kHz producing 50% modulation. The lower and upper side-band frequencies in kHz are
 - (a) 1490, 1510
 - (b) 1510, 1490
 - (c) $\frac{1}{1490}$, $\frac{1}{1510}$
 - (d) $\frac{1}{1510}$, $\frac{1}{1490}$





Answer Key

Q.1) c	Q.2) d	Q.3) d	Q.4) b	Q.5) d
Q.6) a	Q.7) d	Q.8) b	Q.9) c	Q.10) b
Q.11) a				1

