

# WORK SHEET FIRST TERM 2015-16

## PHYSICS XII

### 1 Mark questions

1. What is the direction of the force acting on a charge particle  $q$ , moving with a velocity  $v$  parallel to a magnetic field  $B$ ?
2. Name the part of the electromagnetic spectrum of wavelength  $10^{-2}$  m and mention its one application?
3. A 500 mC charge is at the centre of a square of side 10 cm. Find the work done in moving a charge of 10 mC between two diagonally opposite points on the square?
4. Why is terminal voltage less than emf?
5. Where on the surface of Earth the horizontal component of Earth's magnetic field is zero?
6. Why is the core of a transformer laminated?
7. Why do electric field lines not form closed loops?
8. State lens law?
9. Depict the direction of magnetic field lines due to a circular current carrying loop?
10. Why is the electric field inside a hollow charged spherical conductor zero?

### 2 Marks questions

1. Two point charges  $2\mu\text{C}$  and  $-2\mu\text{C}$  are placed at points A and B 6cm apart. Draw the equipotential surfaces of the system. Why do the equipotential surfaces get closer to each other the point charges?
2. Distinguish between a dielectric and a conductor? Why the electric field between the plates of a capacitor decreases when a dielectric slab is placed between them?
3. The velocities of two alpha particles A and B entering a uniform magnetic field are the ratio of 4:1, what will be the ratio of their radii?
4. State the principle of a potentiometer? A potentiometer of length 4m or 10 m which is more sensitive and why?
5. The period of oscillation of a bar magnet in a vibration magnetometer is measured to be T. The bar magnet used are used to kill germs in water is now carefully cut in two equal pieces without affecting its pole strength. What will be the period of oscillation of one of the pieces?
6. What is an electric dipole? Find an expression for the field strength at a distance  $x$  from the electric dipole on its equatorial line?
7. What is displacement current? How this can be used to remove the inconsistency in Ampere's circuital law?
8. A battery of emf 10V and internal resistance  $3\Omega$  is connected to a resistor. If the current in the circuit is 0.5A, find (i) the resistance and the terminal voltage of the battery?
9. Name two factors on which resistivity of a semiconductor depends?
10. What is the principle of AC generator? Explain its working?

### 3 Marks questions

1. (i) Write down following in decreasing order of their wavelengths: (a)  $\gamma$  rays (b) X rays (c) microwaves  
(ii) Electromagnetic radiations with wavelength (a)  $\lambda_1$  are used to kill germs in water purifiers (ii)  $\lambda_2$  are used in TV communication systems (iii)  $\lambda_3$  play an important role in maintaining the earth's warmth. Name the part of the EM spectrum to which these radiations belong. Arrange these wavelengths in decreasing order of their magnitude?
2. On their inner faces, the plates are having equal and opposite charges (densities of opposite signs and magnitude  $17.0 \times 10^{-22} \text{C/m}^2$ ). What is electric field (i) in the outer region of first plate? (ii) Between the plates in terms of  $\sigma$ ?

3. Draw the curves showing the variation of inductive reactance and capacitive reactance with applied frequency of an ac source? A capacitor, a resistor of  $5\ \Omega$  and an inductor of  $50\text{mH}$  are in series with an ac source marked  $100\text{V}$ ,  $50\text{Hz}$ . It is found that voltage is in phase with current. Calculate the capacitance of the capacitor and the impedance of the circuit?
4. Why resistance increases on joining two wires in series and decreases on joining them in parallel? Find the effective emf and internal resistance of two cells connected in series.
- 5 A capacitor of capacitance  $C$  is fully charged by connecting it to a battery of emf  $E$ . It is then disconnected from the battery. If the separation between the plates of the capacitor is now doubled what will happen to the (a) charge stored by the capacitor (b) potential difference across it (c) field strength between the plates (d) energy stored by the capacitor
- 6 Explain with a circuit diagram how a potentiometer is used to find the internal resistance of a cell?
- 7 .State Gauss's theorem and find out the expression for electric field at a point near a surface distribution of charge of infinite extent. Draw a graph between electric field and separation of point of observation from plane sheet having continuous charge distribution?
- 8 Write the principle of step up transformer? Explain its working?
9. What is drift velocity of electrons? Obtain an expression for it.
- 10 . With the help of a diagram ,explain the principle and working of a moving coil galvanometer?
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