SHIKSHA CLASSES

Subject : Physics | **Question Paper** | **Total Marks :20**

Class : XI | **10 : Electrostatics** | **Time : 1 Hour**

SECTION - A

Q.1 : Choose the correct option : 4

i) An electron is placed between two parallel plates connected to a battery. If the battery is switched on, the electron will

a) be attracted to the +ve plate

b) be attracted to the -ve plate

c) remain stationary

d) will move parallel to the plates

ii) Four coulomb charge is uniformly distributed on 2 km long wire. Its linear charge density is ------.

a) 2 C/m b) 4 C/m

c) 4×10^{-3} C/m d) 2×10^{-3} C/m

iii) Two point charges of +5 μC are so placed that they experience a force of 80 × 10-3 N. They are then moved apart, so that the force is now 2.0 × 10-3 N. The distance between them is now

a) 1/4 the previous distance

b) double the previous distance

c) four times the previous distance .

d) half the previous distance

iv) A metallic sphere A isolated from ground is charged to +50 μC. This sphere is brought in contact with other isolated metallic sphere B of half the radius of sphere A. The charge on the two sphere will be now in the ratio

a) 1 : 2 b) 2 : 1

c) 4 : 1 d) 1 : 1

Q.2 : Answer the following : 2

i) State the law of conservation of charge.

ii) Define point charge.

Section B

: Answer the following : (ANY 2) 4

Q.3 : Define electric field intensity. State its SI unit and dimensions.

Q.4 : State and prove Gauss' law of electrostatic.

Q.5 : Calculate the force between two electric charges 5μC and –2 = μC, separated by a distance of 10 cm.

SECTION C

: Answer the following : (ANY 2) 6

Q.6 : If 400 joules of work must be done to move electric charge equal to 4 C from a place, where potential is –10 volt to another place, where potential is V volt, find the value of V.

Q.7 : Define : i) dipole axis

ii) axial line

iii) equatorial lines

Q.8 : A metal cube of length 0.1 m is charged by 12μC, Calculate its ;

i) Linear charge density

ii) Surface charge density

iii) Volume charge density

SECTION D

: Answer the following : (ANY 1) 4

Q.9 : An electric dipole consists of equal and opposite charge, each of magnitude $8\mu C$ separated by a distance of 0.2 mm. It is placed in a uniform electric field of intensity 50 N/C with the axis of the dipole inclined to the field 30^0. Find ;

i) the electric dipole moment

ii) the moment of the couple acting on the dipole

Q.10 : Point charges having values $+0.1g\mu C + 0.2\mu C, -0.3\mu C$ and $-0.2\mu C$ are placed at the corners A, B, C and D respectively of a square of side one metre. Calculate the magnitude of the force on a charge of $+1\mu C$ placed at the centre of the square.

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