

## UNIT 1 ELECTROSTATICS

## PRACTICE SHEET – 1

## 1. AXIAL LINE:

Diagram:

Explanation:

$$\vec{E}_+ =$$

$$\vec{E}_- =$$

By Superposition principle,  $\vec{E}_{\text{total}} =$ 

$$\vec{E}_{\text{total}} =$$

$$\vec{p}$$

## 2. EQUATORIAL LINE:

Diagram:

Explanation:

$$\vec{E}_{\text{total}} =$$

$$|\vec{E}_+| = |\vec{E}_-| =$$

$$\cos \theta =$$

$$\vec{E}_{\text{total}} =$$

$$\vec{p} =$$

**3. POTENTIAL AT A POINT DUE TO DIPOLE:**

Diagram:

Explanation:

$V_1 =$

$V_2 =$

$V =$

$V =$

$\Delta$  BOP, Cosine law

$\frac{1}{r_1} =$

$\Delta$  AOP, Cosine law

$\frac{1}{r_2} =$

$V =$

$\rho =$

**4. GAUSS LAW: INFINITELY LONG CHARGED LINE WIRE:**

Gauss law :  $\Phi_E =$

Diagram:



$\Phi_E =$

$E \cdot$  =

$E =$   $\vec{E} =$

## UNIT 1 ELECTROSTATICS

## PRACTICE SHEET - 2

## 5. GAUSS LAW: SPHERICAL SHELL:

Gauss law :  $\Phi_E =$

At a point outside the shell:  $\vec{E} =$

At a point on the shell:  $\vec{E} =$

At a point inside the shell:  $\vec{E} =$

## 6. CAPACITOR FILLED WITH DIELECTRIC: BATTERY DISCONNECTED:

1. Charge:  $Q =$

2. Voltage:  $V =$

3. Electric field:  $E =$

4. Capacitance:  $C =$

5. Energy:  $U =$

## 7. CAPACITORS IN SERIES

1. - same  
- differs

2.  $V =$

3.  $V =$

4. If  $C_s$  is the  
then,  $V =$

5.  $\frac{1}{C_s} =$

## CAPACITORS IN PARALLEL

1. - same  
- differs

2.  $Q =$

3.  $Q =$

4. If  $C_p$  is the  
then,  $Q =$

5.  $C_p =$

**8. VAN DE GRAAFF GENERATOR:**

Produces an electrostatic potential difference =

Principle: 1.

2.

Diagram:

Explanation:

WORKING:

Near the comb D: Due to

Charges are repelled towards the \_\_\_\_\_ and  
Charges are attracted towards the \_\_\_\_\_

Near the comb E: Due to

Charges are induced in the comb E  
Charges are distributed on the \_\_\_\_\_

Prevention of leakage: \_\_\_\_\_ filled \_\_\_\_\_ chamber \_\_\_\_\_ at a high

Use: To accelerate \_\_\_\_\_ charged \_\_\_\_\_ ( \_\_\_\_\_ )  
for the purpose of \_\_\_\_\_ disintegration.

READ ALL THE BOOKBACK ONE WORD QUESTIONS AND ANSWERS

\*\*\* Coulomb's law in electrostatics:  $F =$

Electrostatic force is directly proportional to the \_\_\_\_\_ and

Inversely proportional to the \_\_\_\_\_ of the \_\_\_\_\_ between the charges.

Gravitational force is directly proportional to the \_\_\_\_\_ and

Inversely proportional to the \_\_\_\_\_ of the \_\_\_\_\_ between them.

Electrostatic force depends on the \_\_\_\_\_ of the \_\_\_\_\_

Gravitational force does not depend on the \_\_\_\_\_

## UNIT 2 CURRENT ELECTRICITY

## PRACTICE SHEET – 1

## 1. OHM'S LAW – MICROSCOPIC FORM

Diagram:

Explanation:

$V_d =$

$dQ =$

$I =$

$J =$

=

$\vec{j} =$

$\vec{j} =$

 $\sigma$  is

## 2. OHM'S LAW - MACROSCOPIC FORM

Diagram:

Explanation:

$E =$

$J =$

=

Also  $J =$

$V =$

(

) =

where  $R =$ 

and is called

## 3. INTERNAL RESISTANCE OF A CELL – VOLTMETER

Open circuit:

reading gives

of the cell.

Closed circuit: Potential difference across

is equal to the potential difference across

the

$V =$

$\varepsilon - V =$

$1/2,$

$r =$

**4. RESISTORS IN SERIES**

1. – same  
- differs

2.  $V =$

3.  $V =$

4. If  $R_S$  is the  
then,  $V =$

5.  $R_S =$

**RESISTORS IN PARALLEL**

1. - same  
- differs

2.  $I =$

3.  $I =$

4. 4. If  $R_P$  is the  
then,  $I =$

5.  $\frac{1}{R_P} =$

**5. METER BRIDGE:**

Diagram:

FORMULA: Unknown resistance:

$$\frac{P}{Q} = \quad = \quad \frac{P}{Q} =$$

$P =$

Specific resistance:  $\rho =$

UNIT 2 CURRENT ELECTRICITY

PRACTICE SHEET – 2

6. WHEATSTONE'S BRIDGE:

Diagram:

Explanation:

KCR: Junction B:

Junction D:

KVR: ABDA:

ABDA:

$$= 0$$

$$I_1 P =$$

$$I_3 Q =$$

Bridge balance condition:

7. COMPARISON OF EMF: POTENTIOMETER

Diagram:

Primary circuit:

Secondary circuit:

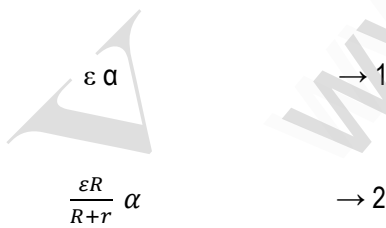
$$\epsilon_1 =$$

$$\epsilon_2 =$$

$$\frac{\epsilon_1}{\epsilon_2} =$$

### 8. INTERNAL RESISTANCE OF A CELL: POTENTIOMETER

Diagram:



1/2

$$r = R ($$