MCQs Related to "ELECTRIC CHARGE"

1. Solid bodies are charged due to the transfer of:
(a) Protons (b) Electrons (c) Neutrons (d) All of these

2. The SI unit if elelctric charge is:
(a) Volt (b) Henry (c) Coulomb (d) Weber

3. Charge on an electron is:
(a) $1.6 \times 10^{19}\ C$ (b) $1.6 \times 10^{-19}\ C$ (c) $9.1 \times 10^{-31}\ C$ (d) $1.67 \times 10^{-27}\ C$

4. How many electron will have a charge of one coulomb?
(a) 6.2×10^{18} (b) 6.2×10^{19} (c) 5.2×10^{18} (d) 5.2×10^{19}

MCQ # 1: (b)	MCQ # 2: (c)	MCQ # 3: (b)	MCQ # 4: (a)

MCQs Related to "12.1 COULOMB'S LAW"

1. Coulomb's law is only applicable for
(a) Big charges (b) Small charges (c) Point charges (d) All charges

2. If the distance between two point charges is doubled, the force between them will become:
(a) Doubled (b) Half (c) Three Times (d) One forth

3. The constant k in Coulomb's Law depends upon
(a) Nature of medium (b) System of units (c) Intensity of charge (d) Both a & b

4. The value of permitivity of free space ε_o is:
(a) $8.85 \times 10^{-12}\frac{C^2}{Nm^2}$ (b) $8.85 \times 10^{-12}\frac{Nm^2}{C^2}$ (c) $8.85 \times 10^{-12}\frac{Nm}{C^2}$ (d) $8.85 \times 10^{-12}\frac{N}{C^2m^2}$

5. The value of coulomb's constant k is:
(a) $9 \times 10^{9}\frac{C^2}{Nm^2}$ (b) $9 \times 10^{9}\frac{Nm^2}{C^2}$ (c) $9 \times 10^{9}\frac{Nm}{C^2}$ (d) $9 \times 10^{9}\frac{N}{C^2m^2}$

6. Unit relative permitivity is
(a) $\frac{C^2}{Nm^2}$ (b) $\frac{Nm^2}{C^2}$ (c) $\frac{N}{C^2m^2}$ (d) no unit

7. Presence of dielectric always:
(a) Increases the electrostatic force (b) Decreases the electrostatic force
(c) Does not effect the electrostatic force (d) Doubles the electrostatic force

8. The value of relative permitivity for all the dielectrics is always:
(a) Less than unity (b) Greater than unity (c) Equal to unity (d) Zero

9. Relative permitivity of air is:
(a) 1.06 (b) 1.006 (c) 1.0006 (d) 1.6

10. The force between two similar unit charges placed one meter apart in air is:
(a) Zero (b) One newton (c) $9 \times 10^{9}\ N$ (d) $9 \times 10^{19}\ N$

11. If the magnitude of charges and distance between them is doubled, then the force will be:
(a) Doubled (b) Halved (c) Remain same (d) On forth

12. When an insulating medium is placed between two charges, the electrostatic force:
(a) Increases (b) decreases (c) zero (d) Remain Same

13. The electrostatic force between two charges is 42 N. If we place a dielectric of $\varepsilon_r = 2.1$, between the charges, then the force become equal to:
(a) 42N (b) 88.2 N (c) 2 N (d) 20 N

MCQ # 1: (c)	MCQ # 2: (d)	MCQ # 3: (d)	MCQ # 4: (a)	MCQ # 5: (b)	MCQ # 6: (d)	MCQ # 7: (b)
MCQ # 8: (b)	MCQ # 9: (c)	MCQ # 10: (c)	MCQ # 11: (c)	MCQ # 12: (b)	MCQ # 13: (d)	

MCQs Related to "12.2 FIELDS OF FORCE"

1. A charge at rest creates around it
(a) Electric field (b) Magnetic field (c) Gravitational field (d) Nuclear field

2. The force experience by a unit positive charge placed at a point in an electric field is called:
(a) Coulomb's force (b) Faraday's force (c) Lorentz's force (d) Electric field intensity

3. NC^{-1} is a unit of
(a) Force (b) Charge (c) Current (d) Electric Intensity

4. If we move away from a charge, the magnitude to electric intensity
(a) Remains constant (b) Increases (c) Decreases (d) Vanish

5. Of the following quantities, the one that is vector in character is an
(a) Electric Charge (b) Electric Field Intensity

(c) Electric Energy (d) Electric Potential Difference

6. A charge of 1 μC experiences electrostatic force of 10^{-6}N, the electric field intensity at that point

(a) 10^{6} NC^{-1} (b) 10^{-6} NC^{-1} (c) 10^{-12} NC^{-1} (d) 1 NC^{-1}

7. The electric intensity at infinite distance from point charge is

(a) Infinite (b) zero (c) positive (d) negative

MCQ # 1: (a)	MCQ # 2: (d)	MCQ # 3: (d)	MCQ # 4: (c)	MCQ # 5: (b)	MCQ # 6: (d)	MCQ # 7: (b)

MCQs Related to "12.3 ELECTRIC FIELD LINES"

1. The lines which provide information about the electric force exerted on charged particles are:

(a) Magnetic field lines (b) Electric field lines (c) Tangent lines (d) Curved lines

2. Electric field lines are

(a) Actual Line (b) Imaginary Lines (c) Solid Lines (d) None of These

3. The tangent to a field line at any point gives the direction of

(a) Electric Intensity (b) Electric Flux (c) Vector Area (d) Electric Current

4. The electric field lines are closer where the field is:

(a) Strong (b) Weak (c) Uniform (d) Variable

5. Electric field lines can never

(a) Attract each other (b) Repel each other (c) Intersect each other

6. The electric field produced due to negative charge is always:

(a) Radially outward (b) Radially inward (c) Circular (d) Zero

7. The electric field created by positive charge is:

(a) Radially outward (b) Zero (c) Circular (d) Radially inward

8. Electric lines of force are parallel and equally spaced, then the electric field is:

(a) Weak (b) Strong (c) Non-Uniform (d) Uniform

MCQ # 1: (b)	MCQ # 2: (b)	MCQ # 3: (a)	MCQ # 4: (a)
MCQ # 5: (c)	MCQ # 6: (b)	MCQ # 7: (a)	MCQ # 8: (d)

MCQs Related to "12.4 APPLICATIONS OF ELECTROSTATICS"

1. Photo-copier and inkjet printers are the applications of:

(a) Electronics (b) Magnetism (c) Electrostatics (d) Thermodynamics

2. The word "Xerography" means:

(a) Writing by left hand (b) Writing by children (c) Dry writing (d) Writing by water colors

3. Aluminum is an excellent

(a) Conductor (b) semi-conductor (c) Insulator (d) photoconductor

4. Selenium is a conductor material when exposed to _____

(a) Dark (b) Light (c) Magnetic field (d) None of these

5. Selenium is an

(a) Insulator (b) Conductor (c) Semiconductor (d) Photoconductor

6. Which part of photocopier is known as the heart of machine

(a) Drum (b) lamp (c) roller (d) toner

7. In ink-jet printer, the droplets are passed through

(a) Gutter (b) Charging electrode (c) Deflection plates (d) Both b & c

8. In an inkjet printer, the charged ink drops are diverted by the deflection plates

(a) Towards the charging electrodes (b) Towards the gutter

(c) Towards a blank paper (d) In inkjet printer, ink cannot be charged

MCQ # 1: (c)	MCQ # 2: (c)	MCQ # 3: (a)	MCQ # 4: (b)
MCQ # 5: (d)	MCQ # 6: (a)	MCQ # 7: (d)	MCQ # 8: (b)

MCQs Related to "12.5 ELECTRIC FLUX"

1. Number of electric lines of force passing through a certain area is known as

(a) Electric field (b) Electric flux (c) Electric potential (d) Potential difference

2. Electric flux is defined as:

(a) $\phi = \mathbf{A}.\mathbf{B}$ (b) $\phi = \mathbf{E} \times \mathbf{A}$ (c) $\phi = \mathbf{E}.\mathbf{A}$ (d) $\phi = \frac{\mathbf{E}}{\mathbf{A}}$

3. For the computation of electric flux, the surface area should be:

(a) Parallel (b) Curved (c) Spherical (d) Flat

4. When vector area is held perpendicular to the field lines, then the magnitude of electric flux is:

(a) Negative (b) Maximum (c) Minimum (d) Zero

5. When vector area is held parallel to electric field lines, the the magnitude of electric flux is:

(a) Maximum (b) Minimum (c) Zero (d) Negative

6. The SI unit of electric flux is:

(a) NmC^{-1} (b) Nm^2C^{-1} (c) NmC^{-2} (d) Nm^2C^{-2}

7. Which one of the following can be taken as measure of electric field intensity:

(a) $\frac{F}{A}$ (b) $\frac{\phi_e}{A}$ (c) $\frac{qA}{\varepsilon_o}$ (d) $\frac{q\varepsilon_o}{A}$

MCQ # 1: (b)	MCQ # 2: (c)	MCQ # 3: (d)	MCQ # 4: (d)	MCQ # 5: (a)	MCQ # 6: (b)	7: (b)

MCQs Related to "12.6 ELECTRIC FLUX THROUGH A SURFACE ENCLOSING A CHARGE"

1. The total electric flux through the surface of the sphere due to a charge q at its center is:

(a) $\frac{q}{\varepsilon_r}$ (b) $\frac{q}{\varepsilon_o}$ (c) $\frac{\varepsilon_o}{q}$ (d) both a & b

2. Electric flux through a close surface does not depend upon:

(a) Shape (b) medium (c) charge (d) none of these

3. The direction of vector area is

(a) Parallel to flat surface (b) perpendicular to flat surface

4. Negative and positive charges in a hollow sphere are equal in magnitude, then the flux from the surface will be:

(a) Zero (b) Positive (c) Negative (d) Both positive and negative

MCQ # 1: (b)	MCQ # 2: (a)	MCQ # 3: (b)	MCQ # 4: (a)

MCQs Related to "12.7 GAUSS'S LAW"

1. The total electric flux through any close surface is directly proportional to:

(a) Enclosed mass (b) Enclosed charge (c) Volume (d) Electric potential

2. According to Gauss's law, electric flux through any close surface is

(a) $\phi_e = \frac{1}{4\pi\varepsilon_o}\frac{q}{r}$ (b) $\phi_e = \frac{1}{\varepsilon_o}\frac{q}{r}$ (c) $\phi_e = \frac{q}{\varepsilon_o}$ (d) $\phi_e = \frac{1}{4\pi\varepsilon_o}(q)$

MCQ # 1: (a)	MCQ # 2: (c)

MCQs Related to "12.8 APPLICATIONS OF GAUSS'S LAW"

1. Gauss's law is more useful in the cases where the charge distributions:

(a) are made of discrete point charges (b) are finite in their special extent

(c) symmetrical charge distribution (d) gives rise to inverse square law distribution

2. The imaginary close surface which passes through the point at which electric intensity is to be measured is called:

(a) Amperean loop (b) Gaussian surface (c) Vector area

3. Electric intensity inside hollow charged sphere is:

(a) (σ/ε_0) (b) $\left(\sigma/2\varepsilon_0\right)$ (c) $(1/\varepsilon_0)$ (d) zero

4. The magnitude of the electric field inside oppositely charged plates, having uniform surface charge density σ, is:

(a) (σ/ε_0) (b) $\left(\sigma/2\varepsilon_0\right)$ (c) $(q/\varepsilon_0 r)$ (d) $\left(\sigma/2\varepsilon_0 r\right)$

5. The electric intensity near an infinite plate of positive charge will be:

(a) (q/ε_0) (b) $\left(\sigma/2\varepsilon_0\right)$ (c) (q/A) (d) (σ/ε_0)

MCQ # 1: (c)	MCQ # 2: (b)	MCQ # 3: (d)	MCQ # 4: (a)	MCQ # 5: (b)

MCQs Related to "12.9 ELECTRIC POTENTIAL"

1. If a charged body is moved agaist the electric field, it will gain:

(a) Potential energy (b) Kinetic energy (c) Mechanical energy (d) Gravitational energy

2. The work done in moving a unit positive charge from one point to another while keeping the charge in equilibrium is called:

(a) Potential energy (b) Kinetic energy (c) Mechanical energy (d) Potential Difference

3. Work done in bringing a unit positive charge from infinity to that point in an electric field is called:

(a) Potential Difference (b) Resistance Capacitance (d) Absolute electric potential

4. Absolute electric potential, due of point charge of 1C at a distance of 1m is given by:

(a) $9 \times 10^6\ volts$ (b) $9 \times 10^7\ volts$ (c) $9 \times 10^8\ volts$ (d) $9 \times 10^9\ volts$

5. One volt is

(a) $\frac{joule}{coulomb}$ (b) $\frac{newton}{coulomb}$ (c) $\frac{coulomb}{second}$ (d) $\frac{watt}{second}$

6. Electric field intensity is also known as

(a) Electric potential (b) Electric flux (c) Potential gradient (d) None

7. The expression $\frac{\Delta V}{\Delta r}$ represent:

(a) Gauss's law (b) Electric flux (c) Electric Intensity (d) Potential Difference

8. In a region where the electric field is zero, the electric potential is always:

(a) Positive (b) Negative (c) Zero (d) Constant

9. In the expression $E = -\frac{\Delta V}{\Delta r}$, the negative sign show that the direction of E is along:

(a) Increasing potential (b) Decreasing potential

10. The electric intensity is expressed in unit of N/C or

(a) volts (b) watt (c) joules (d) $\frac{volt}{meter}$

MCQ # 1: (a)	MCQ # 2: (d)	MCQ # 3: (d)	MCQ # 4: (d)	MCQ # 5: (a)	MCQ # 6: (c)
MCQ # 7: (c)	MCQ # 8: (d)	MCQ # 9: (b)	MCQ # 10: (d)		

MCQs Related to "12.10 ELECTRON VOLT"

1. Electron volt is the unit of

(a) Electric Current (b) Electric Energy (c) Electric Potential (d) Electric Force

2. The amount of energy equal to $1.6 \times 10^{-19}\ J$ is called

(a) 1 volt (b) 1 milli-volt (c) 1 electron volt (d) 1 mega electron volt

3. A particle having 2e charge falls through a potential difference of 5V. Energy acquired by it is:

(a) 2.5 eV (b) 20 eV (c) 0.4 eV (d) 10 eV

4. A charge of 0.01 C accelerated through a p.d of 1000 V acquires K.E

(a) 10 J (b) 100 J (c) 200 J (d) 400 eV

5. 1 joule =_____

(a) $6.25 \times 10^{18}\ eV$ (b) $6.25 \times 10^{-18}\ eV$ (c) $1.6 \times 10^{-19}\ eV$ (d) $9.1 \times 10^{-31}\ eV$

6. One electron volt is equal to

(a) $6.25 \times 10^{18}\ J$ (b) $6.25 \times 10^{-18}\ J$ (c) $1.6 \times 10^{-19}\ J$ (d) $9.1 \times 10^{-31}\ J$

7. If a positive charge particle moves against the electric field, it will gain:

(a) Kinetic Energy (b) Gravitational Energy (c) Electric Potential Energy

8. If a positive charge particle is allowed to moves from positive to negative plate, it will gain:

(a) Kinetic Energy (b) Gravitational Energy (c) Electric Potential Energy

MCQ # 1: (b)	MCQ # 2: (c)	MCQ # 3: (d)	MCQ # 4: (a)
MCQ # 5: (a)	MCQ # 6: (c)	MCQ # 7: (c)	MCQ # 8: (a)

MCQs Related to "12.11 ELECTRIC AND GRAVITATIONAL FORCES (A COMPARISON)"

1. Electrostatic force as compared to the gravitational force is

(a) Very weak (b) Very strong (c) Infinite (d) None of these

2. Gravitational force between two objects does not depend on:

(a) Force (b) Masses (c) Distance (d) Medium

3. Gravitational force is an:

(a) Attractive force (b) Repulsive Force (c) Attractive as well as repulsive

4. Electrostatic force is:

(a) Attractive force (b) Repulsive Force (c) Attractive as well as repulsive

MCQ # 1: (b)	MCQ # 2: (d)	MCQ # 3: (a)	MCQ # 4: (c)

MCQs Related to "12.12 CHARGE ON AN ELECTRON BY MILLIKAN'S METHOD"

1. The charge on the electron was calculated by

(a) Faraday (b) J.J. Thomson (c) Millikan (d) Einstein

2. Millikan devised a technique for measurement of charge on an electron in

(a) 1889 (b) 1899 (c) 1909 (d) 1929

3. In Millikan's experiment, the oil drop can be suspended between two plates when the gravitational force is equal to

(a) Magnetic Force (b) Electric Force (c) Normal Force (d) Nuclear Force

4. An electric field that balance the weight of an oil droplet will act

(a) Downward (b) Upward (c) Along surface of sphere

5. The equation for the stokes law is $F_D =$ _____

(a) $6\pi\eta r$ (b) $8\pi\eta r v$ (c) $6rv$ (d) $6\pi\eta r v$

6. The charge determined by the Millikan's experiment is

(a) $q = \frac{mgd}{V}$ (b) $q = \frac{mVd}{g}$ (c) $q = \frac{gVd}{m}$ (d) None of these

MCQ # 1: (c)	MCQ # 2: (c)	MCQ # 3: (b)	MCQ # 4: (b)	MCQ # 5: (d)	MCQ # 6: (a)

MCQs Related to "12.13 CAPACITOR"

1. **Capacitors may be considered as a device for**

(a) Storing energy (b) Increasing resistance (c) Decreasing resistance (d) None

2. **The charge stored in a capacitor is directly proportional to**

(a) Resistance (b) Resistivity (c) Amount of Current (d) Potential Difference

3. **An expression for magnitude of charge on either of the plates of a capacitor is given by:**

(a) $Q = CA$ (b) $Q = CV$ (c) $Q = \frac{C}{A\varepsilon_0}$ (d) $Q = \frac{A\varepsilon_0}{d}$

4. **Farad is the S.I. unit of**

(a) Charge (b) Current (c) Electric Flux (d) Capacitance

5. **Farad is defined as:**

(a) $\frac{Coulomb}{Volt}$ (b) $\frac{Ampere}{Volt}$ (c) $\frac{Coulmb}{Joult}$ (d) $\frac{Joule}{Coulomb}$

6. **A capacitor of capacitance $1\mu F$ is fully charged from a $20\,V$ D.C. source. What is the charge stored by the capacitor:**

(a) 2 μC (b) 20 μC (c) 0.5 μC (d) 200 μC

MCQ # 1: (a)	MCQ # 2: (d)	MCQ # 3: (b)	MCQ # 4: (d)	MCQ # 5: (a)	MCQ # 6: (b)

MCQs Related to "12.14 CAPACITANCE OF A PARALLEL PLATE CAPACITOR"

1. **If the medium between the plates of a parallel plate capacitor is air or vacuum, then its capacitance is given by:**

(a) $C_{vac} = \frac{A}{\varepsilon_0\, d}$ (b) $C_{vac} = \frac{A\varepsilon_0}{d}$ (c) $C_{vac} = \frac{\varepsilon_0\, d}{A}$ (d) $C_{vac} = \frac{d}{\varepsilon_0\, A}$

2. **The medium used between the plates of capacitor is called**

(a) Polarization (b) Dielectric (c) Insulators (d) Medium

3. **If some dielectric medium of dielectric constant ε_r is inserted between the plates of a parallel plate capacitor, then its capacitance is given by:**

(a) $C_{med} = \frac{A}{\varepsilon_0\varepsilon_r\, d}$ (b) $C_{med} = \frac{A\varepsilon_0\,\varepsilon_r}{d}$ (c) $C_{med} = \frac{\varepsilon_0\varepsilon_r\, d}{A}$ (d) $C_{med} = \frac{d}{\varepsilon_0\,\varepsilon_r A}$

4. **Inserting a dielectric between the plates of a charged parallel plate capacitor**

(a) Decreases Capacitance (b) Increases capacitance
(c) Leaves the capacitance same (d) Encourages the breakdown between plates

5. **The ratio of C_{vac} and C_{med} is equal to**

(a) ε_r (b) $\frac{1}{\varepsilon_r}$ (c) ε_0 (d) $\frac{1}{\varepsilon_0}$

6. **If 'Q' is the charge on either of the plates of a parallel plate capacitor of area A, the surface charge density on the plate is given by:**

(a) $\sigma = \frac{A}{Q}$ (b) $\sigma = \frac{Q}{2A}$ (c) $\sigma = \frac{Q}{A}$ (d) $\sigma = \frac{2A}{Q}$

MCQ # 1: (c)	MCQ # 2: (d)	MCQ # 3: (b)	MCQ # 4: (b)	MCQ # 5: (c)	MCQ # 6: (d)

MCQs Related to "12.15 ELECTRIC POLARIZATION OF DIELECTRICS"

1. **When a dielectric material s placed in an electric field, it:**

(a) Conducts (b) Exhibit Charge (c) Undergoes Electrolysis (d) Become Polarized

2. **Two equal and opposite charge separated by a small distance form:**

(a) Electric dipole (b) Amperean current (c) Null charge (d) Neutral source

3. **Dielectric is also called:**

(a) Conductor (b) Insulator (c) Semi-Conductor

4. **The increase in capacitance of a capacitor due to presence of dielectric is due to_____of dielectric**

(a) Electrification (b) Ionization (c) Electrolysis (d) Electric Polarization

MCQ # 1: (d)	MCQ # 2: (a)	MCQ # 3: (b)	MCQ # 4: (d)

MCQs Related to "12.16ENERGY STORED IN A CAPACITOR"

1. **The expression of energy stored in a capacitor is given by:**

(a) $U = CV^2$ (b) $U = \frac{1}{2}CV^2$ (c) $U = \frac{1}{2}C^2V$ (d) $U = \frac{1}{2}(CV)^2$

2. **If the potential difference across the two plates of a parallel plate capacitor is double, then the energy stored in it will be:**

(a) 2 times (b) 8 times (c) 4 times (d) Remains constant

3. **Energy density in case of a capacitor is always proportional to**

(a) ε_o (b) C (c) V^2 (d) E^2

4. Unit of energy density of electric field is:

(a) J C^{-1} (b) J V^{-1} (c) J m^{-3} (d) J F^{-3}

5. A capacitor stores energy in the form of:

(a) Magnetic field (b) Heat energy (c) Electrical energy (d) Mechanical energy

6. The expression for the energy density *u* is:

(a) $\frac{1}{2}\varepsilon_0\varepsilon_r E^2\,(Ad)$ (b) $\frac{1}{2}\,\varepsilon_0\varepsilon_r E^2$ (c) $\frac{1}{2}\,\frac{\varepsilon_0\varepsilon_r E^2}{Ad}$ (d) $\frac{\varepsilon_0\varepsilon_r E^2}{Ad}$

7. Will a capacitor store more energy with a dielectric other than air?

(a) Yes (b) No

8. In a charged capacitor, the energy resides in:

(a) In the negative plate (b) in the positive plate (c) edges of plates in (d) field between plates

MCQ # 1: (b)	**MCQ # 2: (c)**	**MCQ # 3: (d)**	**MCQ # 4: (c)**	**MCQ # 5: (c)**	**MCQ # 6: (b)**
MCQ # 7: (a)	**MCQ # 8: (d)**				

MCQs Related to "12.17 CHARGING AND DISCHARGING A CAPACITOR"

1. The speed of charging or discharging a cpacitor depends upon product of resistance and _____

(a) Current (b) Voltage (c) Capacitance (d) Charge

2. The term "RC" has same unit as that of:

(a) Potential (b) Capacitance (c) Energy (d) Time

3. During charging of a capacitor, the ratio of instantaneous charge and maximum charge on plates of capacitors at t = RC is

(a) 36.8% (b) 63.2% (c) 20% (d) 30%

4. If RC is small, then capacitor will be charged and discharged

(a) Slowly (b) Quickly (c) With Medium Speed (d) No Effect

5. In RC series circuit, the correct relation for the time constant is:

(a) $R.t = C$ (b) $C.t = R$ (c) $R.C = t$ (d) $C.V = Q$

6. A 5 MΩ resistor is connected with a 2 μF capacitor. The time constant of the circuit is:

(a) 0.1 s (b) 1 s (c) 2.5 s (d) 10 s

MCQ # 1: (c)	**MCQ # 2: (d)**	**MCQ # 3: (b)**	**MCQ # 4: (b)**	**MCQ # 5: (c)**	**MCQ # 6: (d)**