

**➤ CHARGE :**

**Q.1:** An ebonite rod is rubbed with fur or wool. What type of charges do they acquire? **CBSE**

**Q.2:** A glass rod is rubbed with silk. What type of charge do they acquire ? **CBSE**

**➤ PROPERTIES OF ELECTRIC CHARGES :**

**Q.3:** A glass rod rubbed with silk acquires a charge  $+1.6 \times 10^{-12}$  C. What is the charge on the silk ? On what principle is your based ? **CBSE**

**Q.4:** Name any two basic properties of electric charge. **CBSE**

**Q.5:** What is quantization of electric charge ? **CBSE**

**Q.6:** Can a body have charge  $2.5e$ , where 'e' is electronic charge?

**Q.7:** A system has two charges  $q_A = 2.5 \times 10^{-7}$  C and  $q_B = -2.5 \times 10^{-7}$  C located at A ( 0 , 0 , - 15 cm ) and B ( 0 , 0 , + 15 cm ) respectively. What is the total charge of the system ?

**Q.8:** Can a body have a charge of  $0.8 \times 10^{-19}$  C ? Justify your answer.

**Q.9:** Is mass of a body affected on charging ? **CBSE**

**Q.10:** What is the effect of speed on the mass of a charged particle ? **CBSE**

**Q.11:** If a body contains  $n_1$  electrons and  $n_2$  protons then what is the total charge on the body?

**Q.12:** Consider three objects A , B and C. The objects A and B repel each other, while A and C attract. What is the nature of force between B and C?

**Q.13:** How many electronic charges form one coulomb of charge ? [ Ans:  $6.25 \times 10^{18}$  ] **CBSE**

**Q.14:** Calculate the charge carried by  $1.25 \times 10^{18}$  electrons. [ Ans: 0.2 C ]

**Q.15:** What is the value of charge on a body which carries 20 excess of electrons ? [Ans:  $3.2 \times 10^{-18}$  C]

**Q.16:** Give two difference between charge and mass.

☒ **Q.17:** A polythene piece rubbed with wool is found to have a negative charge of  $3 \times 10^{-7}$  C.

(a) Estimate the number of electrons transferred from wool to polythene piece ?

(b) Is there a transfer of mass from wool to polythene ? If yes , how much ?

[ Ans: (a)  $1.875 \times 10^{12}$  (b)  $1.706 \times 10^{-18}$  Kg ]

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- ☑Q.18: (i) Explain the meaning of the statement “electric charge of a body is quantized”.  
(ii) Why can one ignore quantization of electric charge when dealing with macroscopic i.e large scale charges ?

➤ **COLUMB’S LAW :**

Q.19: Name the balance used by Coulomb’s to measure the force between two charged metallic spheres.

Q.20: Give the value of electric permittivity of free space along with its units.

Q.21: State Coulomb’s law of force in electrostatics.

Q.22: Two charged spherical conductors , each of radius  $R$  , are distant ‘ $d$ ’ (  $d > 2R$  ). They carry charges  $+q$  and  $-q$ . Will the force of attraction between them be exactly  $\frac{q^2}{4\pi\epsilon_0 d^2}$  ?

Q.23: Two charges  $q_1$  and  $q_2$  by a small distance satisfy the equation  $q_1 + q_2 = 0$ . What does it tell us about the charges ? **CBSE**

Q.24: Calculate force between two charges of 1C each separated by 1m in vacuum.

Q.25: How is force between two charges affected when each charge is doubled and distance between them is also doubled ?

Q.26: In a medium , the force of attraction between two point electric charges , distance ‘ $d$ ’ apart is ‘ $F$ ’. What distance apart should these be kept in the same medium so that the force between them

becomes : (i)  $3F$  (ii)  $9F$  (iii)  $\frac{F}{3}$  (iv)  $\frac{F}{4}$  (v)  $\frac{F}{5}$  ?

[ Ans: (i)  $\frac{d}{\sqrt{3}}$  (ii)  $\frac{d}{3}$  (iii)  $d_2 = \sqrt{3} d$  (v)  $d_2 = \sqrt{5} d$ ]

Q.27: Two point charges  $q_1$  and  $q_2$  are such that  $q_1 q_2 < 0$ . What is the nature of the force between the two charges ? **CBSE**

Q.28: Two point charges  $q_1$  and  $q_2$  are such that  $q_1 q_2 > 0$ . What is the nature of the force between the two charges ? **CBSE**

Q.29: Plot a graph showing the variation of columb force ( $F$ ) versus  $\left(\frac{1}{r^2}\right)$ , where ‘ $r$ ’ is the distance between the two charges of each pair of charges (  $1\mu C, 2\mu C$  ) and (  $2\mu C, -3\mu C$  ). Interpret the graphs obtained. **CBSE - AI**

Q.30: Calculate the Coulomb’s force between two  $\alpha$  - particles separated by a distance  $3.2 \times 10^{-15}$  m in air. [ Ans: 90 N ] \*\*\* Charge on  $\alpha$  - particle =  $2e = 2 \times 1.6 \times 10^{-19} = 3.2 \times 10^{-19}$  C **CBSE**

Q.31: Calculate the force of electrostatic attraction between a proton and an electron separated by a distance of  $8 \times 10^{-14}$  m. [ Ans: - 3.6 N ] **CBSE**