

# PHYSICS CLASS 12 BATCH

## Electric Charges and Field

DPP-02

1. Two identical charges repel each other with a force equal to 10 g-wt when they are 0.6 m apart in air. ( $g = 10 \text{ ms}^{-2}$ ) The value of each charge is:  
(1)  $2mC$  (2)  $2 \times 10^{-7}C$   
(3)  $2nC$  (4)  $2\mu C$
2. Two charges each of  $1\mu C$  are at a distance 1 cm apart in vacuum, the force between them is:  
(1)  $9 \times 10^3 \text{ N}$  (2)  $90 \text{ N}$   
(3)  $1.1 \times 10^{-4} \text{ N}$  (4)  $10^4 \text{ N}$
3.  $+2C$  and  $+6C$  two charges are repelling each other with a force of 12 N. If each charge is given  $-2C$  of charge, then the value of force will be:  
(1) 4N (Attractive) (2) 4N (Repulsive)  
(3) 8N (Repulsive) (4) Zero
4. Two charges placed in air repel each other by a force of  $10^{-4} \text{ N}$ . When oil is introduced between the charges, the force on the charge becomes  $2.5 \times 10^{-5} \text{ N}$ . The dielectric constant of oil is:  
(1) 2.5 (2) 0.25  
(3) 2.0 (4) 4.0
5. The charges on two spheres are  $+7\mu C$  and  $-5\mu C$  respectively. They experience a force  $F$ . If each of them is given additional charge of  $-2\mu C$ , the new force of attraction will be:  
(1)  $F$  (2)  $F/2$   
(3)  $F/\sqrt{3}$  (4)  $2F$
6. Two spherical conductors  $B$  and  $C$  having equal radii and carrying equal charges in them repel each other with a force  $F$  when kept apart at some distance. A third spherical conductor having same radius as that of  $B$  but uncharged is brought in contact with  $B$ , then brought in contact with  $C$  and finally removed away from both. The new force of repulsion between  $B$  and  $C$  is:  
(1)  $\frac{F}{4}$  (2)  $\frac{3F}{4}$   
(3)  $\frac{F}{8}$  (4)  $\frac{3F}{8}$
7. Two positive ions, each carrying a charge  $q$ , are separated by a distance  $d$ . If  $F$  is the force of repulsion between the ions, the number of electrons missing from each ion will be ( $e$  being the charge on an electron)  
(1)  $\frac{4\pi\epsilon_0 Fd^2}{e^2}$  (2)  $\sqrt{\frac{4\pi\epsilon_0 Fe^2}{d^2}}$   
(3)  $\sqrt{\frac{4\pi\epsilon_0 Fd^2}{e^2}}$  (4)  $\frac{4\pi\epsilon_0 Fd}{e^2}$
8. A charge  $q_1$  exerts some force on a second charge  $q_2$ . If third charge  $q_3$  is brought near, the force that  $q_1$  exerts on  $q_2$  and net force on  $q_2$  respectively  
(1) decreases, increases  
(2) increases, increases  
(3) remains unchanged, may increase or decrease  
(4) remains unchanged, remains unchanged

# ANSWER KEY

1. (4)
2. (2)
3. (4)
4. (4)
5. (1)
6. (4)
7. (3)
8. (3)