



# PHYSICS

## BOOKS - PUNJAB BOARD PREVIOUS YEAR PAPERS

### Electric Charges and Electrostatic Force

**Exercise**

1. Force of attraction between two point electric charges placed at a distance  $d$  in a medium is  $F$ . What distance apart should these be kept in the same medium, so that between them becomes  $F/3$



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2. If the distance between two equal point charges is doubled and their individual

charges are also doubled, what would happen to the force between them?



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**3.** Calculate the Coulomb's force between two  $\alpha$  particles separated by a distance of  $3.2 \times 10^{-15} m$



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4. Ten electrons have been removed from each atom to form ions. Find the electrostatic force between two such ions when separated by a distance of  $4\overset{\circ}{\text{A}}$  in a medium of dielectric Constant 4.



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5. Five electrons have been removed from each atom to form ions. Find the electrostatic force between two such ions when separated by a

distance of  $2\overset{\circ}{\text{A}}$  in a medium of dielectric Constant 4.



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6. Twenty electrons have been removed from each atom to form ions. Find the electrostatic force between two such ions when separated by a distance of  $8\overset{\circ}{\text{A}}$  in a medium of dielectric Constant 4.



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7. Two similar charges repel each other with a force of 44.1 Newton when placed 2cm apart in air. Calculate the strength of charge.



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8. What is the Coulomb's force between two small charged spheres having charges  $2.0 \times 10^{-7}$  C and  $3.0 \times 10^{-7}$  Coulomb placed 30 cm in air.



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**9.** Find the electrostatic force between two protons placed in free space separated by distance 20 cm.



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**10.** Calculate the Coulomb's force between two  $\alpha$  particles separated by a distance of  $3.2 \times 10^{-15} m$



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**11.** Calculate the Coulomb's force between two  $\alpha$  particles separated by a distance of  $3.2 \times 10^{-15} m$



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**12.** calculate the Coulomb's force between two protons separated by  $1.6 \times 10^{-15} m$



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**13.** calculate the Coulomb's force between a proton and electron separated by  $0.8 \times 10^{-15} m$



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**14.** In Coulomb's law, on what factors the value of electrostatic force Constant 'K' depends ?



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**15.** How many electrons are present in one coulomb of charge?



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**16.** Define S.I. unit of electric charge.



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**17.** Electrostatic force between two charges is called central force. Why?



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**18.** Write two properties of electric charge.



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**19.** State the limitations of Coulomb's law.



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**20.** Write a relation between absolute and relative electrical permittivity of a medium.



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**21.** Write a relation for the electrostatic force between two point charges placed in a dielectric medium.



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**22.** Define dielectric Constant of a medium.



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**23.** Write two properties of electric charge.



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**24.** Explain quantisation of charge.



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**25.** A charged rod P attracts rod R whereas P repels another charged rod Q. What type of force is developed between Q and R ?



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**26.** Define S.I. unit of electric charge.



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**27.** Explain quantisation of charge.



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**28.** Discuss Conservation of charge.



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**29.** Write two properties of electric charge.



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**30.** How many electrons are present in one coulomb of charge?



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**31.** Explain quantisation of charge.



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**32.** Explain quantisation of charge.



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**33.** Give four properties of electric charge.



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**34.** Write two properties of electric charge.



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**35.** State Coulomb's law in electrostatics.



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**36.** What do you mean by quantisation and Conservation of charge ?



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**37.** Give two differences between gravitational and electrostatic forces.



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**38.** State principle-of superposition of charges and using it find an expression for force acting at a point charge due to assembly of 'n' point charges.



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**39.** State Coulomb's law, explain its vector form and define SI unit of electric charge. State two limitations of Coulomb's law.



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