

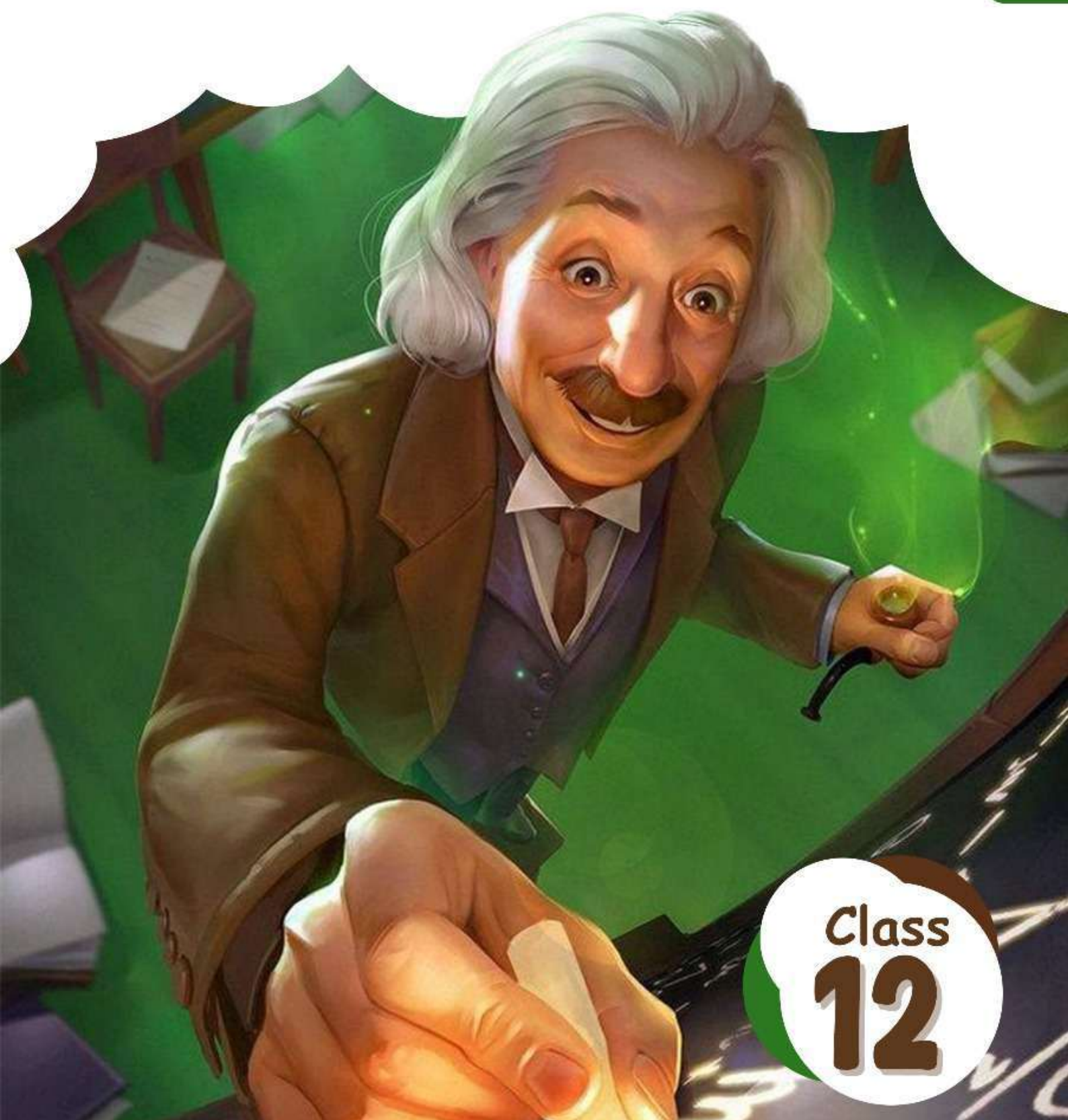


RBSE

CHAPTERWISE PYQ

PHYSICS

2013 - 2025



Class
12

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Chapters

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ELECTRIC CHARGES AND FIELDS

Multiple Choice Questions :-

- (RBSE 2021)

- [1M]

- (RBSE 2022, 2025)

- [1M]

- (RBSE 2023)

- [0.5M]

- (RBSE 2024)

- [0.5M]

- (RBSE 2025)

Fill in the Blanks :-

6. A uniformly charged thin spherical shell has an electric field at all points _____ inside it. [1M]
(RBSE 2023)
7. The field lines of a single positive charge are radially _____. [0.5M]
(RBSE 2024)
8. The electric field intensity at axis due to a electric dipole is inversely proportional to the _____ of distance. [0.5M]
(RBSE 2025)

Very Short Answer Type Questions:-

9. Write the statement of Gauss's law. [1M]
(RBSE 2013, 2015, 2016, 2019, 2022)
10. Write any two properties of electric field lines. [1M]
(RBSE 2013)
11. Write the definition of electric dipole moment. [1M]
(RBSE 2019, 2016)
12. Write the definition of dielectric constant of a medium. [1M]
(RBSE 2020)
13. In Millikan's experiment, the charge found on a charged droplet was - 6.4×10^{-19} Coulomb, then write the number of electrons in that charged droplet. [1M]
(RBSE 2022)
14. Show the electric field lines due to a single positive charge ($q > 0$). [1M]
(RBSE 2023)
15. Write the value of electric field due to an electric dipole at a point on its axis. [1M]
(RBSE 2023)
16. Define the electric dipole moment. [1M]
(RBSE 2025)

[Section-B]**Short Answer Type Questions:-**

17. Calculate the electric potential at distance r produced by a point charge $+Q$. [1.5M]
(RBSE 2025)
18. An infinite line charge produces a field of $4.5 \times 10^4 \text{ NC}^{-1}$ at a distance 4 cm. Calculate the linear charge density of it. [1.5M]
(RBSE 2025)

[Section-C]**Long Answer Type Questions:-**

19. (a) Derive a relation for electric field due to an electric dipole at a point on the equatorial plane of the electric dipole. Draw necessary diagram.

(b) An electric dipole of charge $\pm 1 \mu\text{C}$ exists inside a spherical Gaussian surface of radius 1 cm.

Write the value of outgoing flux from the Gaussian surface.

[3M]

(RBSE 2015)

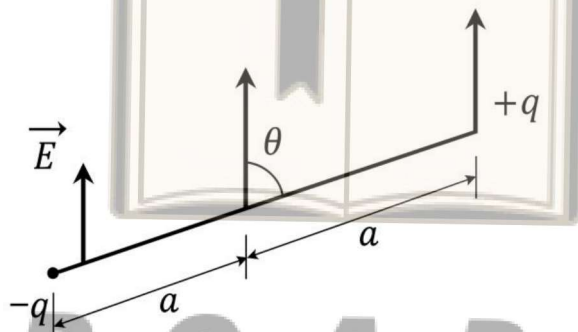
20. Write Gauss's law. Using this law, find the electric field due to a uniformly charged infinite plane sheet at a point near the sheet.

[3M]

(RBSE 2013, 2019, 2022, 2024)

21. Write the definition of electric dipole. An electric dipole is placed in uniform external electric field (\vec{E}) as shown in the figure. Calculate the torque on this electric dipole

[3M]



(RBSE 2022)

22. Derive formula for the electric field due to electric dipole at any point on the equatorial plane. Draw necessary diagram.

[3M]

(RBSE 2015, 2024)

[Section-D]**Very Long Answer Type Questions:-**

23. Write the statement of Gauss' law for electrostatics. Draw a diagram and derive an expression for electric field due to a uniformly charged infinite plane sheet at a point near the sheet. In the given diagram write the value of electric flux passing from the surface.

$$\bullet q_1 = 2\mu\text{C}$$

$$\bullet q_2 = -1\mu\text{C}$$

[4M]

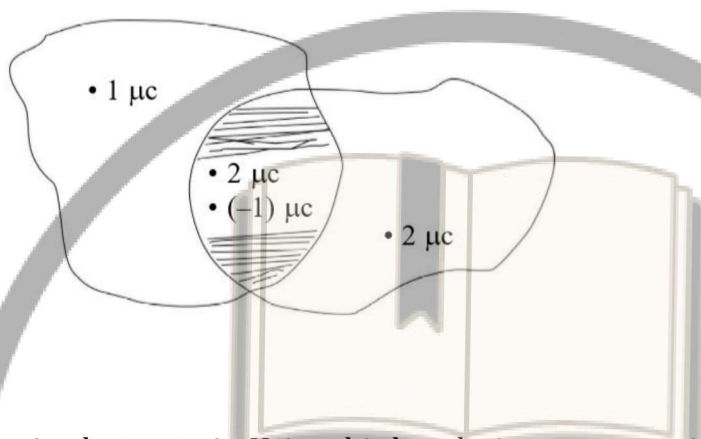
(RBSE 2013, 2019, 2023, 2024)

24. Define electric flux. Apply Gauss' law to obtain an expression for the electric field intensity at a point due to an infinitely long uniformly charged straight wire. Draw the necessary diagram. [4M]

(RBSE 2014, 2016, 2017)

25. Write definition of electric field intensity. Obtain an expression for electric force and electric pressure on the surface of a charged conductor. Draw necessary diagram. [4M]
(RBSE 2018)

26. (a) Write the statement of Gauss's law for electrostatics. Derive an expression for electric field due to an uniformly charged infinite non-conducting sheet at a point near to it. Draw suitable diagram. (RBSE 2013, RBSE 2022)
(b) Calculate net electric flux from shaded region in given diagram.



[4 MARKS]
(RBSE 2019)

27. State Gauss' law in electrostatic. Using this law derive an expression for intensity of electric field at any point near to a uniformly charged infinite conducting plate. Draw necessary diagram. [4M]
(RBSE 2021)

28. Define intensity of electric field. Obtain the formula for the intensity of electric field at a point on the axial line due to the electric dipole. Draw necessary diagram. [4M]
(RBSE 2021)



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