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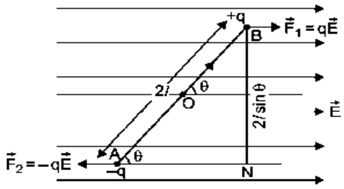
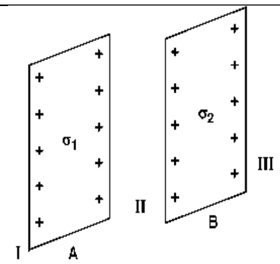
SUB :- PHYSICS CLASS XII 2022-23

REVISION PAPER UNIT- I –ELECTRIC CHARGES AND FIELDS

Note: Q. No. 1-4 is of 01 mark each, Q. 5-6 is of 02 marks each, Q.No.7 is of 03 marks, Q. No. 8 is a case study based and is of 04 marks, Q. No. 11 is of 5 marks.

S N	Question	Marks
1	Two-point charges + Q and + q is separated by a certain distance. If + Q > + q then in between the charges the electric field is zero at a point (a) closer to + Q (b) exactly at the mid-point of line segment joining + Q and + q. (c) closer to + q (d) nowhere on the line segment joining + Q and + q.	1
2	**Assertion**: A metallic shield in form of a hollow shell may be built to block an electric field. **Reason:** In a hollow spherical shield, the electric field inside it is zero at every point. a- Both assertion and reason are correct and the reason is the correct explanation of assertion. b- Both assertion and reason are correct and reason is not a correct explanation of assertion. c- Assertion is correct but the reason is incorrect d- Assertion is incorrect but the reason is correct.	1
3	Electric lines of force about a negative point charge are (a) circular anticlockwise (b) circular clockwise (c) radial, inwards (d) radial, outwards	1
4	The electric field at a point on equatorial line of a dipole and direction of the dipole moment (a) will be parallel (b) will be in opposite direction (c) will be perpendicular (d) are not related	1
5	Two identical metallic spheres of exactly equal masses are taken. One is given a positive charge 'q' and other an equal negative charge. Are their masses after charging equal?	2
6	An electric dipole free to move is placed in an electric field. What is the action on it, when it is placed in (a) a uniform electric field (b) a non-uniform electric field?	2
7	Derive a relation for the intensity of electric field at an equatorial point of an electric dipole.	3
	Case study-based questions (questions no 8- 11) In a uniform electric field of strength E, the net electric force is zero; but a torque equal to pE sin θ acts on the dipole (where θ is the angle between directions of dipole moment p and electric field E). This torque tends to align the dipole along the direction of electric field. Torque in vector form $\vec{\tau} = \vec{p} \times \vec{E}$  8. When is the torque applied is maximum? 1 9. What is the direction of torque applied 1 10. What is net force and net when an electric dipole is placed in uniform electric field? 2 **OR** 10. What is net force and net when an electric dipole is placed in non-uniform electric field? 2	4
11	(a) A point charge (+Q) is kept in the vicinity of uncharged conducting plate. Sketch electric field lines between the charge and the plate. (b) Two infinitely large plane thin parallel sheets having surface charge densities σ1 and σ2 (σ1> σ2) are shown in the figure. Write the magnitudes and directions of the net fields in the regions marked II and III.  	5