

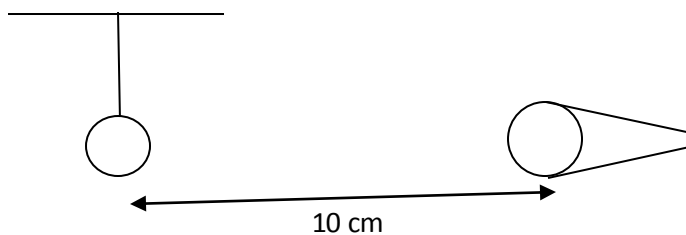
## ELECTROSTATICS

## ELECTRIC CHARGES AND FIELDS–Test Paper-II

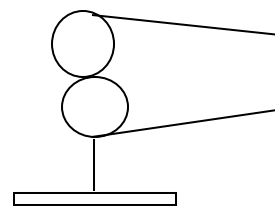
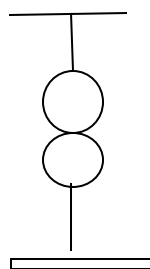
MAX MARKS: 30

TIME: 90Mts

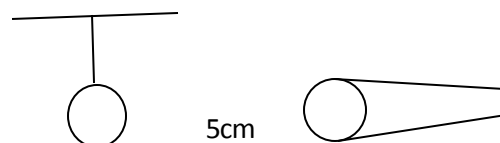
- |   |   |              |   |
|---|---|--------------|---|
| 1 | What are the basic properties of electric charge?   | Page:8       | 2 |
| 2 | Give the value of charge on an electron.  | Page:9       | 1 |
| 3 | If $10^9$ electrons move out of a body to another body every second, how much time is required to get a total charge of 1C on the other body? | Page:10      | 2 |
| 4 | How much positive and negative charge is there in a cup of water?   | Page:10      | 2 |
| 5 | State Coulomb's law. Give vector form of the equation for finding the force acting between any two charges.                                   | Page:10 & 12 | 2 |
| 6 | Define the SI unit of electric charge.  | Page:11      | 1 |
| 7 |   |              |   |



I



3



A metallic sphere A is suspended by a nylon thread. Another charged metallic sphere B held by an insulating handle is brought close to A such that the distance between their centres is 10 cm. The resulting repulsion of A is noted. Spheres A and B are touched by uncharged spheres C and D respectively, as shown in fig. C and D are

then removed and B is brought closer to A to a distance of 5.0 cm between their centres, as shown in fig. What is the expected repulsion of A on the basis of Coulomb's law? Spheres A and C and spheres B and D have identical sizes. Ignore the sizes of A and B in comparison to the separation between their centres. **Page:14**

- |    |  |   |
|----|--|---|
| 8  | Give the formula to find the effective force on a given charge due to the forces exerted by the other charges.   | 1 |
|    | <b>Page:16</b>   |   |
| 10 | Define electric field due to a charge. Give an expression to find the electric field due to a charge. What is the SI unit of electric field?   | 2 |
|    | <b>Page:18</b>   |   |
| 11 | Show diagrammatically what is the electric field due to a positive charge and a negative charge.   | 2 |
|    | <b>Page:18</b>   |   |
| 13 | Give the properties of electric field lines.   | 2 |
|    | <b>Page:25</b>   |   |
| 14 | Define electric line of force.   | 1 |
|    | <b>Page:24</b>   |   |
| 15 | Define electric flux through an area element $\Delta S$ . Give the factors on which the electric flux depends upon. Also give the formula to find the electric flux through an area element. | 3 |
|    | <b>Page:26</b>   |   |
| 16 | What is an electric dipole? Derive an expression to find the electric field at a point on the axis of an electric dipole.  | 3 |
|    | <b>Page:27</b>   |   |
| 17 | Derive an expression to find the electric field at a point on the equatorial line. Give the physical significance of dipole.   | 3 |
|    | <b>Page:28</b>   |   |