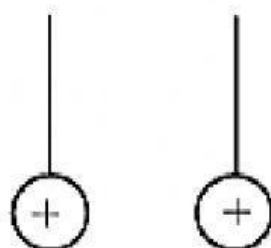# Electrostatics

End of Chapter Exercises:

1. What are the two types of charge called?

3. Fill in the blanks: The electrostatic force between like charges is _____ while the electrostatic force between opposite charges is _____ .
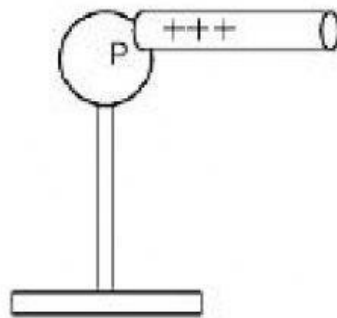
4. I have two positively charged metal balls 2 m apart.
a) Is the electrostatic force attractive or repulsive?
b) If I now move the balls so that they are 1 m apart, what happens to the strength of the electrostatic force between them?   INCREASES / DECREASES / REMAINS THE SAME

5. I have 2 charged spheres each hanging from string as shown in the picture below.

Choose the correct answer from the options below: The spheres will
a. swing towards each other due to the attractive electrostatic force between them
b. swing away from each other due the the attractive electrostatic force between them
c. swing towards each other due to the repulsive electrostatic force between them
d. swing away from each other due to the repulsive electrostatic force between them

8. An uncharged hollow metal sphere is placed on an insulating stand. A positively charged rod is brought up to touch the hollow metal sphere at P as shown in the diagram below. It is then moved away from the sphere.

Where is the excess charged distributed on the sphere after the rod has been removed?
a) It is still located at point P where the rod touched the sphere
b) It is evenly distributed over the outer surface of the hollow sphere
c) It is evenly distributed over the outer and inner surfaces of the hollow sphere
d) No charge remains on the hollow sphere

9. What is the process called where molecules in an uncharged object are caused to align in a particular direction due to an external charge?

12. An object has an excess charge of -8×10^{-19} C.   How many excess electrons does it have?

13. An object has an excess of 235 electrons. What is the charge on the object?

14. An object has an excess of 235 protons. What is the charge on the object?

15. Two identical, metal spheres have different charges. Sphere 1 has a charge of -4.8×10^{-18} C. Sphere 2 has 60 excess electrons. If the two spheres are brought into contact and then separated, what charge will each have? How many electrons does this correspond to?

16. Two identical, metal spheres have different charges. Sphere 1 has a charge of -96×10^{-18} C . Sphere 2 has 60 excess electrons. If the two spheres are brought into contact and then separated, what charge will each have?

17. Two identical, metal spheres have different charges. Sphere 1 has a charge of $-4.8 \times 10^{-18}\,C$. Sphere 2 has 30 excess protons. If the two spheres are brought into contact and then separated, what charge will each have? How many electrons or protons does this correspond to?

Q$_{new}$:   Number of electrons: