

G9 Science: Class 10 Homework

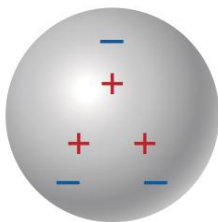
1. a) Which particles are difficult to add or remove from an atom? **[2 marks]**

b) Which particle is easy to add or remove from an atom? **[1 mark]**

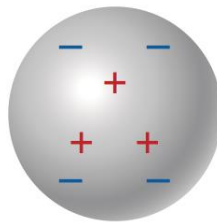
c) How does your answer in (A) and (B) explain the formation of positively and negatively charged objects? **[1 mark]**

2. Describe the total charge on each of the following objects as either neutral, positive, or negative. Explain your reasoning. **[4 marks]**

(a)



(b)



3. What would you do to the object below to make it positively charged? What would you do to the object below to make it negatively charged? **[2 marks]**



4. Consider the following pairs of materials. Using the electrostatic series, determine the charge that each material will gain when the two are rubbed together and complete the chart. **[4 marks]**

Materials	Material #1	Charge	Material #2	Charge
Glass and Silk	Glass		Silk	
Ebonite and Fur	Ebonite		Fur	
Human hair and Rubber Balloon	Human hair		Rubber Balloon	
Amber and Cotton	Amber		Cotton	

5. A rod "X" has a positive charge of +8. An identical rod "Y" has a negative charge of -4. The rods are touched together and then separated.
- When they touched, what particles moved between them? **[1 mark]**
 - Did the particle move from X to Y or Y to X? **[1 mark]**
 - What is this method of charging called? **[1 mark]**
6. Describe how electrons travel when a positively charged object is grounded. **[2 marks]**
7. Compare the conductivity of pure water and salt water. **[4 marks]**

8. Electricians often use screwdrivers with thick rubber handles. Explain why. **[2 marks]**

9. A golfer and her caddy see lightning nearby. The golfer is about to take a shot with a metal club, while her caddy is holding a plastic-handled umbrella at the same height. Which person is at a greater risk? Explain your answer. **[3 marks]**

10. Complete the following table. Assume that the object getting charged is neutral just prior to using the charging method. **[8 marks]**

Charging Method	Object Doing the Charging	Object Getting Charged	Explanation of the Movement Charge
Charging by Induction (Temporary)	Positive		
Charging by Induction (Temporary)	Negative		
Charging by Induction (Permanent)	Positive		
Charging by Induction (Permanent)	Negative		

11. Why is it important that gas tank vehicles ground their vehicle before re-filling the gas at gas stations? **[3 marks]**

12. Draw diagrams to show how an object can be charged:

a. Positively by temporary induction **[2 marks]**

b. Negatively by conduction **[2 marks]**

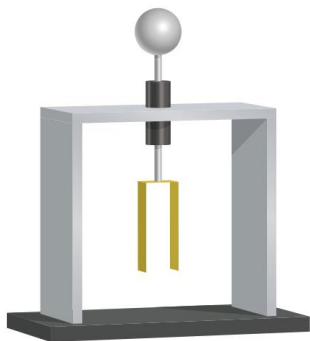
c. Neutral by grounding **[2 marks]**

13. Static clings and plastic decals can attach to windows without using glue. Explain how these decals stay on the window. **[2 marks]**

14. An experiment involved three charged objects. Object A repels Object B and attracts Object C. Object C is repelled by ebonite charged with fur. What is the charge on each object? Explain your reasoning? **[4 marks]**

15. You decide to bug your best friend by giving them electric shocks. Using the electrostatic series think about what you have to wear and what you have to rub against to shock your friend. **[3 marks]**

16. You are performing an experiment with an electroscope.



a) Describe how you would charge the electroscope and explain how you would know if you were successful. **[2 marks]**

b) Describe how you would discharge the electroscope and explain how you would know if you were successful. **[2 marks]**

17. Suppose you are employed by an electrical company to repair damage to power lines. It is raining and you receive a call from the company to go out and repair a power line that fell down when a tree landed on it. Describe what you would wear on your hands and feet as you repaired the fallen power line. Justify your answer. **[3 marks]**

18. The figure below shows three balls hanging from strings. Show how the balls would hang if the centre ball and the left ball were positively charged and the ball on the right were negatively charged. Use the symbols (+) and (-) to mark the charge of each ball. **[3 marks]**

