

PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

1. Which atomic particles are electrically charged?
 - (a) both electrons and protons
 - (b) both electrons and neutrons
 - (c) both protons and neutrons
2. A neutral pith ball is:
 - (a) attracted by another uncharged pith ball.
 - (b) repelled by a charged glass rod.
 - (c) attracted by a charged glass rod.
3. A piece of fur is negatively charged when:
 - (a) the electrons become positively charged.
 - (b) it has a deficit of electrons.
 - (c) it has an excess of electrons.
4. 4 objects (R, S, T, U) are brought together. S has a positive charge. The following is observed:
 - ① Sphere S attracts all the other spheres.
 - ② Spheres T and U repel each other.
 - ③ Sphere R attracts all the other spheres.

It can be concluded that sphere R is:

 - (a) neutral
 - (b) positive.
 - (c) negative.
5. When a positively charged object is brought close to (but not touching) the knob of a neutral metal-leaf electroscope, the leaves will separate because:
 - (a) both leaves are negative & the knob is positive.
 - (b) both leaves are positive & the knob is negative.
 - (c) none of the above.
6. If X attracts Y but repels Z, then X must be:
 - (a) charged only.
 - (b) neutral only.
 - (c) either neutral or charged.
7. A glass rod becomes negatively charged when rubbed with acetate. This means that after rubbing:
 - (a) the glass rod has a deficiency of electrons while the acetate has an excess of electrons.
 - (b) the glass rod has an excess of electrons while the acetate has a deficiency of electrons.
 - (c) none of the above.
8. When the knob of a neutral metal-leaf electroscope is touched with a positively charged rod:
 - (a) no electron flow takes place.
 - (b) electrons move from the rod to the knob.
 - (c) electrons move from the knob to rod.
9. When a positively charged rod is brought close to a neutral pith ball which is free to move, the pith ball will:
 - (a) be repelled by the rod.
 - (b) be attracted by the rod.
 - (c) do nothing.
10. Whenever a net charge is placed on an object by contact, the kind of charge on the object:
 - (a) is the same as the charge on the charging agent.
 - (b) is opposite to the charge on the charging agent.
 - (c) depends on the kind of material of the object.

PART B: MATCH (5 MARKS)

Match the definition from the 1st column to the best term in the 2nd column and place the matching letter in the appropriate space on your answer sheet.

- | | |
|---|----------------------------|
| 1. Study of electric charges that move very little. | A) conductor |
| 2. Substance in which the movement of electrons is restricted. | B) contact |
| 3. Method of charging which involves touching the object with a charged object. | C) electrostatics |
| 4. Consists of two thin metal leaves suspended from a conductive metal rod. | D) friction |
| 5. Method of charging where two different neutral objects are rubbed together. | E) ground |
| | F) induction |
| | G) insulator |
| | H) metal-leaf electroscope |
| | I) photoconductor |
| | J) pith-ball electroscope |

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
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PART B: MATCH (5 MARKS)

1	2	3	4	5
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PART C: SHORT ANSWER (45 MARKS)

Answer questions 1 to 6 in the space provided. Answer questions 7 and 8 on the back of this sheet.

{3} 1. State the law of electric charges

① _____

② _____

③ _____

{3} 2. Consider the following interactions between 3 pith-balls (A,B,C). B is repelled by a positively charged rod; A is attracted to B; and there is no interaction between A and C. Determine the electrostatic charge(s) on each of the spheres.

A ☞ _____ B ☞ _____ C ☞ _____

{6} 3. Complete the following chart that summarizes the properties for the 3 atomic particles.

Name	Charge	Location
neutron		
		nucleus
	-1	

{4} 4. List 2 ways to (i) charge a neutral object & (ii) discharge a charged object.

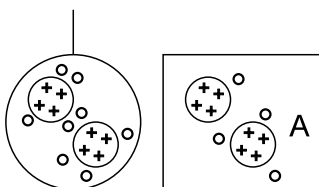
(i) ① _____ ② _____

(ii) ① _____ ② _____

{10} 5. If the \circ = e's, what charge (# & type) is on the:

(a) pith-ball? _____

(b) vinylite? _____

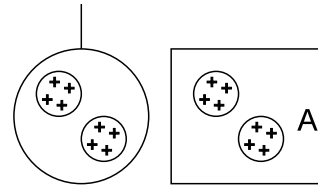


Would these objects attract or repel? Explain.

Redraw the objects after they have touched. What charge (# & type) is now on the:

(a) pith-ball? _____

(b) vinylite? _____



Do these objects now attract or repel? Explain.

{3} 6. List 3 practical applications of electrostatics. (Recall the reading/note-taking assignment.)

① _____ ② _____ ③ _____

7. Use the electrostatic chart to the right to help answer this question.

{3} (a) A wool sweater is worn under a plastic raincoat. Assuming both objects are neutral to begin with, what charge will appear on the sweater when it rubs against the raincoat? Explain why?

{4} (b) With the aid of properly labelled diagrams explain how (a) occurs. What method of charging is used?

{5} (c) The raincoat is now brought near but not touching a neutral pith ball. With the aid of properly labelled diagrams explain what will happen? What is this called?

{4} 8. What makes oil refineries and gas stations among the most dangerous places to work? What precautions are taken? Why?

Weak hold on e's	☞	acetate
		wool
↓ increasing	↓	fur/hair
↓ tendency	↓	silk
↓ to gain	↓	cotton
↓ electrons	↓	ebonite
		plastic
Strong hold on e's	☞	rubber