

Chapter 9 Quiz

Part A: Modified True/False

Indicate whether each statement is true or false. If false, modify the statement to make the statement true.

F ①. A ^{negative OR equal} neutral object has ~~more~~ negative charge than positive charge.

F ②. A ^{positive OR attracted} neutral object is ~~repelled~~ by an object with a positive charge.

F ③. When a charged object is ^{OR} ~~brought near, without~~ touching a neutral object, that object is given the ~~same~~ charge by ~~conduction~~.

T ④. As the distance between two charged objects increases, the electric force between them decreases. ^{opposite induction}

Part B: Multiple Choice

Circle the letter beside the answer that best answers the question or completes the statement.

⑤. Which of the following correctly identifies the particle with its electric charge?

	Particle	Electric Charge
①	electron	negative
②	proton	negative
③	neutron	negative
④	neutron	positive

⑥. When a negative vinyl strip is brought near a hanging neutral pith ball, the pith ball will be

- (a) repelled by the vinyl strip (b) unaffected by the vinyl strip
 (c) attracted to the vinyl strip (d) first attracted to the vinyl strip and then repelled by the vinyl strip

⑦. Why does an acetate strip rubbed with a paper towel acquire a positive charge?

- (a) The acetate strip loses positive charge to the paper towel.
 (b) The acetate strip loses negative charge to the paper towel.
 (c) The acetate strip gains positive charge from the paper towel.
 (d) The acetate strip gains negative charge from the paper towel.

⑧. Why are neutral dust particles attracted to television screens?

- (a) Friction causes a buildup of static electricity on the dust particles.
 (b) The television screen is neutral and attracts the neutral dust particles.
 (c) The television screen induces a separation of charge in the dust particles.
 (d) A static charge is conducted from the television screen to the dust particles.

Chapter 9 Quiz (continued)

9. Which of the following is a good insulator?
 (a) iron (b) dry air
 (c) copper (d) tap water
10. The electric force depends on the amount of charge and the distance between the charges. Which of the following pair of changes will always increase the force?

	Amount of Charge on Objects	Distance Between Charged Objects
(a)	decreases	decreases
(b)	decreases	increases
(c)	increases	decreases
(d)	increases	increases

11. Electrostatic precipitators are used to
 (a) remove ash particles from smoke
 (b) generate sparks to ignite barbecues
 (c) encourage rain to fall in desert areas
 (d) settle sediments in liquids containing impurities

Part C: Short Answer Questions

Use complete sentences or diagrams to answer each question.

12. A negatively charged vinyl rod is brought toward a neutral pith ball. The pith ball is attracted to the rod and then flies away. Draw diagrams to explain why this occurred.

negative rod induces a separation of charge on the pith ball by repelling the electrons

Positive side of pith ball is attracted to rod.

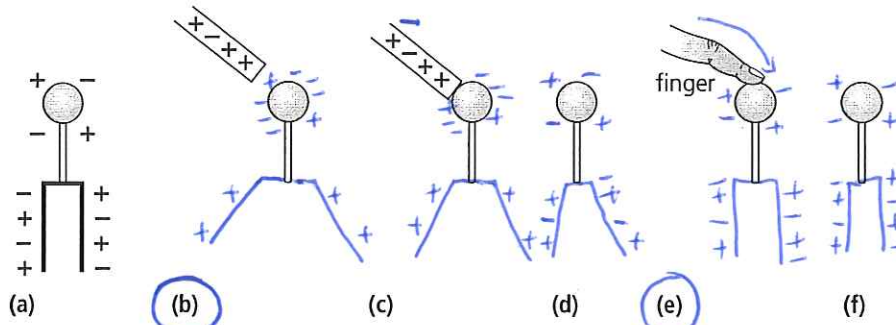
when contact is made pith ball gains some of the extra e^- on the rod, acquiring a neg. charge.

Negative Pith ball repels from negative rod.

4

Chapter 9 Quiz (continued)

13. Complete the diagrams below to show how the leaves of a neutral electroscope shown in (a) would respond when: (b) a positive rod is brought near, (c) a positive rod touches the metal ball of the electroscope, (d) the rod is removed, (e) the metal ball is touched by a human finger, and (f) the metal ball is left untouched. Show the charges.



14. Describe how you could determine the charge on a charged object.

1

Bring another charged object ^{with known charge} near. If they repel, same charge, if attract, opposite charge.

15. You have a negative strip and a neutral aluminum sphere on a stand. Explain how you could give the aluminum sphere a positive charge.

2

Ground the sphere on the opposite side ^{from which} the negative strip is brought near. The e^- repelled by the strip will then be pushed off the sphere to ground, leaving the sphere positively charged.

Chapter 10 Quiz

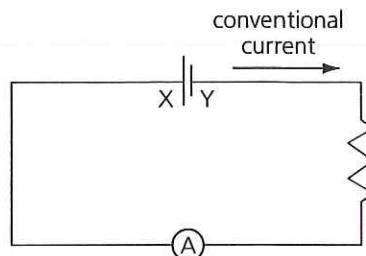
Part A: Modified True/False

Indicate whether each statement is true or false. If false, modify the statement to make the statement true.

F 1. The ^{negative} ~~positive~~ terminal of the cell in the figure is labelled "Y." ^{OR}

F 2. The arrow shows the ^{opposite} ~~direction~~ of ^{OR} ~~conventional~~ ^{e^- movement} current.

T 3. The direction of conventional current is opposite to the direction of electron flow.



Part B: Multiple Choice

Circle the letter beside the answer that best answers the question or completes the statement.

4. Three cells, each with a voltage of 1.3 V, are connected as shown in the circuit diagram. The cells are connected to a voltmeter. What is the voltage shown by the voltmeter?

- (a) 0.65 V (b) 1.3 V
(c) 2.6 V (d) 3.9 V

5. What is the minimum number of cells needed to make a 6 V battery if each cell has an individual rating of 1.5 V?

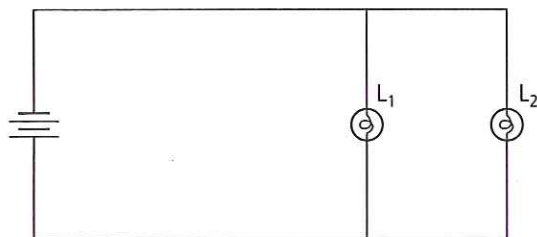
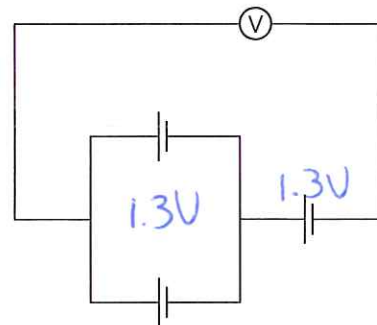
- (a) 1 (b) 2
(c) 3 (d) 4

6. A current of 24 mA is equivalent to

- (a) 0.024 A (b) 0.24 A
(c) 24 A (d) 24 000 A

7. The circuit shows two light bulbs (L_1 and L_2). If the second light bulb (L_2) burns out, what happens to the first light bulb (L_1)?

- (a) It goes out.
(b) It gets dimmer.
(c) It becomes brighter.
(d) It will stay on without changing its brightness.



Chapter 10 Quiz (continued)

8. Select the choice that indicates how a voltmeter and an ammeter are connected with the resistor.

	Voltmeter	Ammeter
(a)	in series	in series
(b)	in series	in parallel
(c)	in parallel	in series
(d)	in parallel	in parallel

9. A student connects a resistor as shown in the circuit in question 8. The ammeter has a reading of 41 mA and the voltmeter has a reading of 2.6 V. What is the resistance of the resistor?
 $R = \frac{V}{I} = \frac{2.6V}{0.041A} = 63\Omega$
- (a) 0.016 Ω (b) 0.28 Ω
 (c) 16 Ω (d) 63 Ω
10. A student replaces the resistor in question 9 with a 22 Ω resistor. The voltmeter has a reading of 2.6 V. What is the ammeter reading?
 $I = \frac{V}{R} = \frac{2.6V}{22\Omega} = 0.118A$
- (a) 8.4 mA (b) 19 mA
 (c) 57 mA (d) 120 mA

Part C: Short Answer Questions

Use complete sentences to answer each question.

11. What is the voltage in a 1 k Ω resistor having a current of 50 mA flowing through it?
 $V = I \cdot R$
 $= 0.050A \cdot 1000\Omega = 50V$
12. Three 1.5 V dry cells are connected in parallel and hooked up to a single lamp with a resistance of 30 Ω . How much current is flowing through the lamp?
 $I = \frac{V}{R} = \frac{1.5V}{30\Omega} = 0.05A = 50mA$
13. A 9 V battery is connected to three 30 Ω lamps that are connected in series. Draw a circuit diagram.
- (a) What is the total resistance of the three lamps?
 $3 \cdot 30\Omega = 90\Omega$
- (b) How much current flows from the battery?
 $I = \frac{V}{R} = \frac{9V}{90\Omega} = 0.1A = 100mA$
- (c) What is the voltage across the first lamp?
 $V = I \cdot R$
 $= 0.1A \cdot 30\Omega = 3V$

