

**Science 9 Final Exam****Multiple Choice**

Identify the choice that best completes the statement or answers the question.

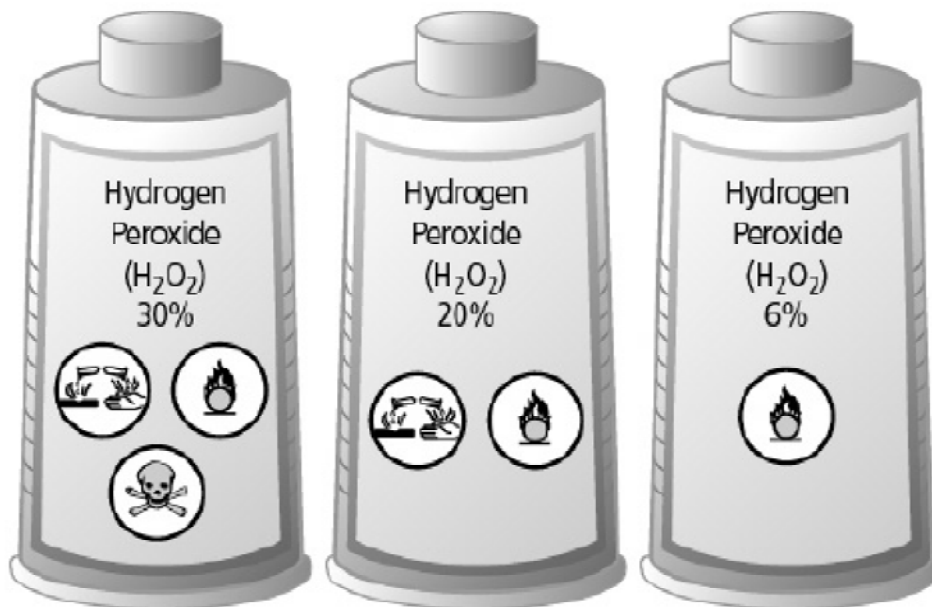
- \_\_\_\_\_ 1. If any part of your body comes into contact with a harmful chemical during a science experiment, the first thing you should do is
- go to the nearest hospital to see a doctor.
  - wash the affected area with water.
  - rinse the affected area with a diluted vinegar and water solution.
  - wait and see if there is a reaction.



- \_\_\_\_\_ 2. When the above WHMIS safety symbol is present on a container, it indicates that the substance is
- poisonous.
  - flammable and combustible.
  - corrosive.
  - dangerously reactive.
- \_\_\_\_\_ 3. What does this WHMIS symbol mean?



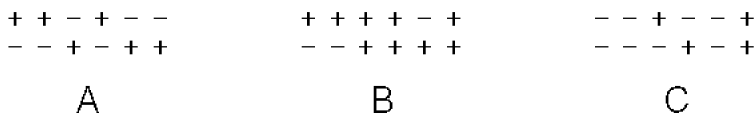
- dangerously reactive substance
  - corrosive material
  - oxidizing material
  - flammable and combustible material
- \_\_\_\_\_ 4. What does the abbreviation WHMIS stand for?
- Workplace Hazardous Meanings and Information System
  - Workplace Hazardous Materials in Symbols
  - Workplace Hazardous Materials Information System
  - Working Hazardous Materials in Systems



- \_\_\_\_\_ 5. The labels on the bottles illustrated above tell you that as the percentage of H<sub>2</sub>O<sub>2</sub> in water decreases, the solution becomes
- more flammable.
  - more concentrated.
  - more corrosive.
  - less poisonous.
- \_\_\_\_\_ 6. When you rub different materials with wool or cotton and then hold the materials together, you can determine
- the properties of electric charges.
  - the speed of movement of electrons.
  - the sizes of electromagnetic fields.
  - which materials have a magnetic field.
- \_\_\_\_\_ 7. A plastic ball hanging by a string is attracted to a positively charged plastic rod. What can you conclude about the ball?
- It could be neutral or positively charged.
  - It is definitely positively charged.
  - It is definitely negatively charged.
  - It could be neutral or negatively charged.
- \_\_\_\_\_ 8. How does a positively charged object become neutralized?
- It loses protons.
  - It gains protons.
  - It gains electrons.
  - It loses electrons.
- \_\_\_\_\_ 9. When an uncharged object loses electrons, it becomes
- fully charged.
  - negatively charged.
  - neutral.
  - positively charged.
- \_\_\_\_\_ 10. What charge will a material take on if it gains electrons?
- a negative charge
  - no charge
  - a neutral charge
  - a positive charge

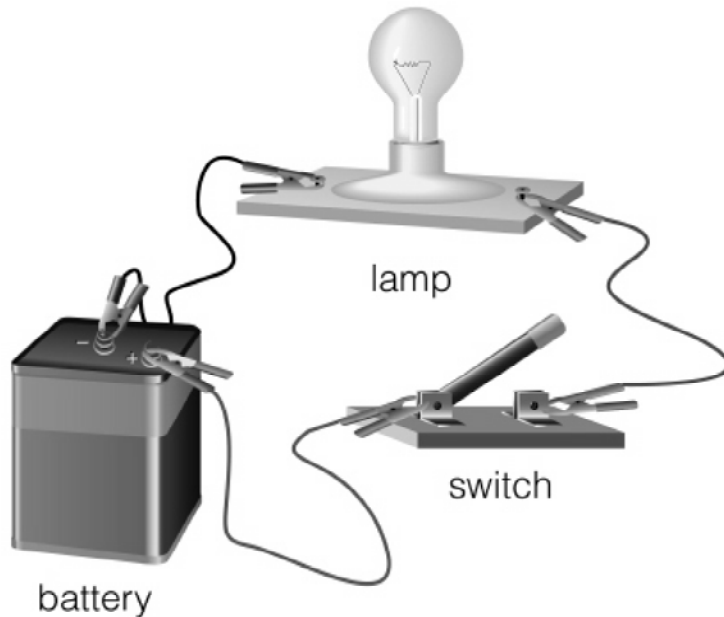
- \_\_\_\_\_ 11. Which of the following are among the laws of static electricity?
- I. Similar charges attract.
  - II. Similar charges repel.
  - III. Opposite charges attract.
  - IV. Opposite charges repel.
  - V. Neutral objects are not attracted to charged objects.
  - VI. Neutral objects are attracted to charged objects.
- a. I, IV, and VI
  - b. I, IV, and VI
  - c. II, III, and V
  - d. II, III, and VI
- \_\_\_\_\_ 12. Materials that do not allow a charge to move freely on or through them are called
- a. conductors.
  - b. unbalanced.
  - c. balanced.
  - d. insulators.
- \_\_\_\_\_ 13. Materials that allow charges to flow through them are called
- a. unbalanced.
  - b. conductors.
  - c. insulators.
  - d. balanced.

The following diagram illustrates the charge on three different objects, A, B, and C.



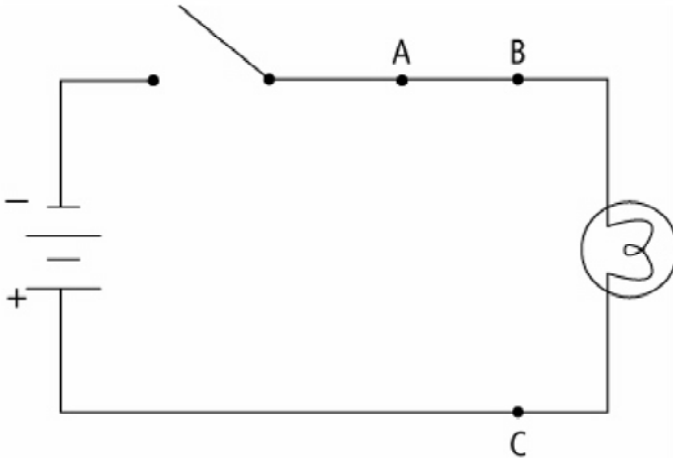
- \_\_\_\_\_ 14. In the illustration above, object A is
- a. positively charged.
  - b. negatively charged.
  - c. neutral.
  - d. a semiconductor.
- \_\_\_\_\_ 15. Which of the following statements best describes the structure of an atom?
- a. a positively charged nucleus, consisting of protons and neutrons, orbited by electrons
  - b. electrons and protons within the nucleus, orbited by neutrons
  - c. a dense, positively charged nucleus, orbited by protons and electrons
  - d. negatively charged protons and neutrons in the nucleus, orbited by electrons

The following diagram illustrates a simple circuit.



- \_\_\_ 16. What is the best way to measure the current through the circuit illustrated above?
- a voltmeter inserted between the battery and the switch
  - an ammeter inserted between the battery and the switch
  - an ammeter inserted between the lamp and the battery
  - either B or C
- \_\_\_ 17. What instrument is used to measure electric current?
- an ammeter
  - a switch
  - an ohmmeter
  - a voltmeter
- \_\_\_ 18. What is the unit of measurement for electric current?
- the ampere
  - the charge
  - the electron
  - the volt
- \_\_\_ 19. When you measure current, you are measuring the number of
- neutrons that pass a point in 1 s.
  - protons that pass a point in 1 s.
  - electrons that pass a point in 1 s.
  - atoms that pass a point in 1 s.
- \_\_\_ 20. Potential difference is more commonly referred to as
- current.
  - amperes.
  - joules.
  - voltage.
- \_\_\_ 21. Which of the following is *not* a requirement for an electric circuit?
- a continuous pathway
  - a grounder
  - a conductor
  - a source
- \_\_\_ 22. To determine the resistance of an electrical device in a simple electric circuit, you would have to take measurements using
- an ammeter.
  - a voltmeter.
  - an ammeter and a voltmeter.
  - two voltmeters, one for the battery and one for the device.

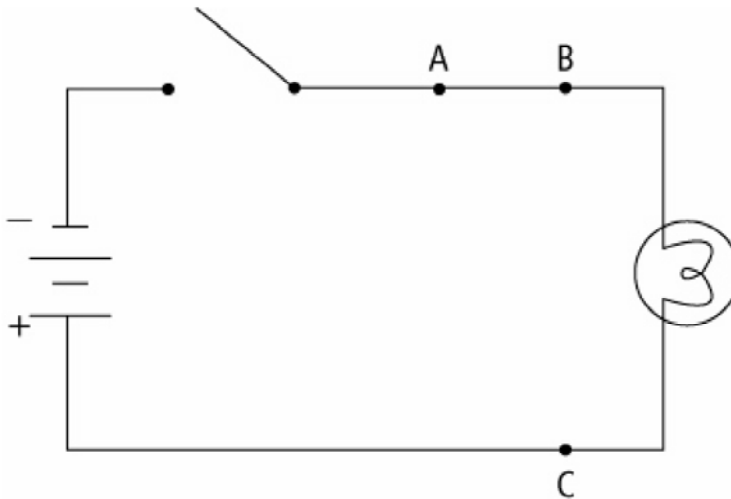
- \_\_\_ 23. Which of the following best describes Ohm's law?
- Potential difference equals energy divided by charge.
  - Resistance equals potential difference divided by current.
  - Resistance equals current divided by potential difference.
  - Current equals charge divided by time.
- \_\_\_ 24. Voltage, current, potential difference, and resistance are all features of an electric circuit. Which of the following terms describes what opposes the motion of electrons?
- Resistance
  - Potential difference
  - Current
  - Voltage
- \_\_\_ 25. The following diagram illustrates a circuit that consists of a battery, a switch, and a lamp.



- The battery has a voltage of 9 V and the lamp has a resistance of 6  $\Omega$ . What is the current through the circuit?
- 0.67 A
  - 3 A
  - 1.5 A
  - 72 A
- \_\_\_ 26. Which of the following best describes the movement of electrons around a series circuit?
- The electrons take one of several possible paths.
  - The electrons give up equal amounts of energy as they pass through each branch of the circuit.
  - The current is higher near the power source than anywhere else in the circuit.
  - The electrons follow the same path around the circuit.
- \_\_\_ 27. A series circuit has three 5  $\Omega$  resistors. What is the total resistance of the circuit?
- 0.2  $\Omega$
  - 5  $\Omega$
  - 15  $\Omega$
  - 45  $\Omega$
- \_\_\_ 28. Which of the following characteristics do parallel circuits display?
- The potential difference is the same across each branch.
  - The sum of the currents through all branches is equal to the total current through the entire circuit.
  - The total resistance of the circuit increases as more loads are added in parallel.
- II and III
  - I and III
  - III
  - I and II

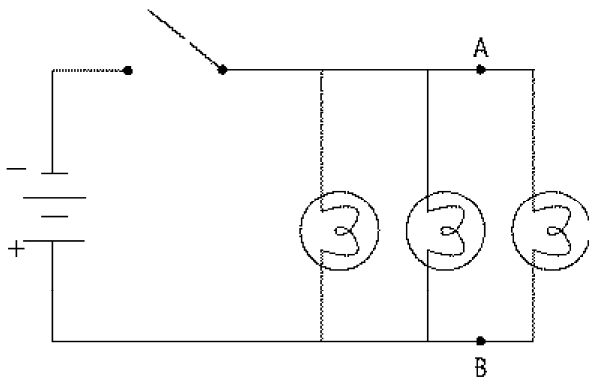
- \_\_\_\_\_ 29. Three identical resistors are connected in series to a 6 V power supply. An ammeter is used to determine the total current ( $I$ ) through the 6 V power supply circuit. Which equation will give the resistance of the second resistor?
- Resistance =  $6\text{ V} \times I$
  - Resistance =  $6\text{ V} \div I$
  - Resistance =  $6\text{ V} \div 3 I$
  - Resistance =  $6\text{ V} \times 3 I$
- \_\_\_\_\_ 30. In a circuit with three identical resistors connected in parallel, the resistance across an individual resistor is always
- equal to the total resistance of the circuit.
  - greater than the total resistance of the circuit.
  - less than the total resistance of the circuit.
  - dependent on the number of resistors connected to the circuit.

The following diagram illustrates a circuit consisting of a battery, a switch, and a lamp.



- \_\_\_\_\_ 31. In the circuit illustrated above, what will happen to the lamp if a resistor is added to the circuit at point A?
- It will get brighter.
  - It will get dimmer.
  - It will go out.
  - It will remain unchanged.

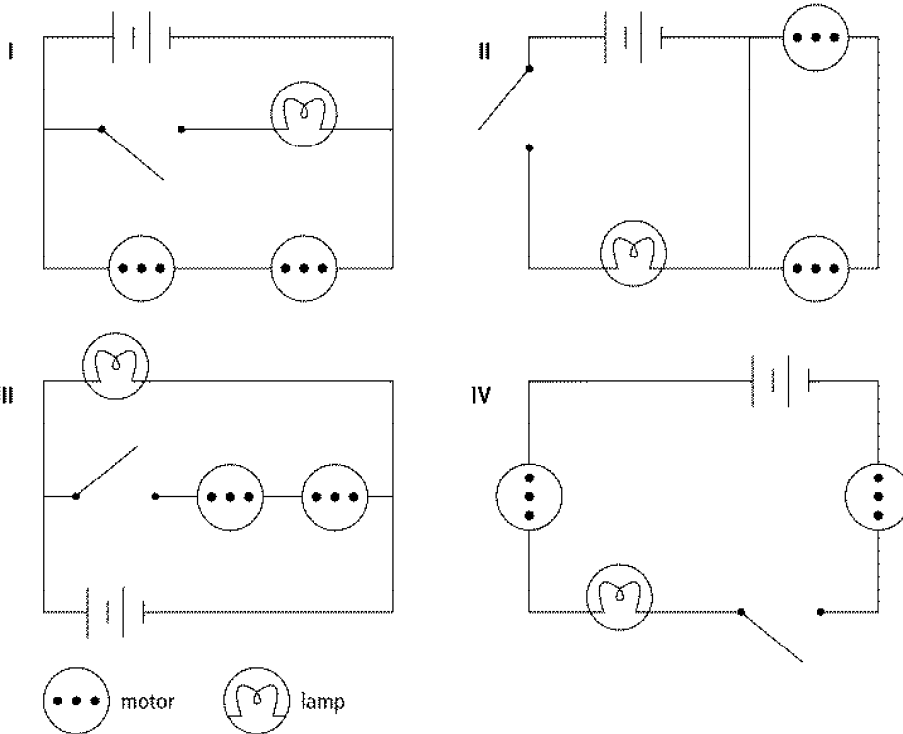
32. The following circuit has three identical lamps connected in parallel.



When an electric current is passed through the circuit,

- a. the lamp closest to the energy source will be the brightest.
- b. the lamp farthest from the energy source will be the brightest.
- c. the lamp in the middle will be the brightest.
- d. the lamps will all have the same brightness.

The following diagram shows four different circuits in which two motors and a lamp are connected to a battery.

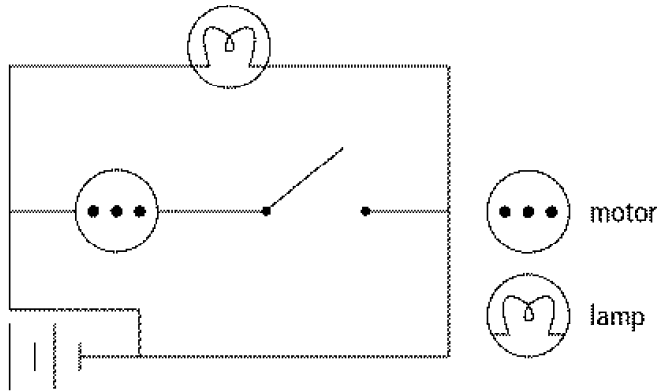


33. In which of the circuits shown above will the motors work *only* when the switch is closed?

- a. I, II, and III
- b. I, II, and IV
- c. I, III, and IV
- d. II, III, and IV

34. Of the circuits shown above, which will allow the lamp to light up *only* when the switch is closed?

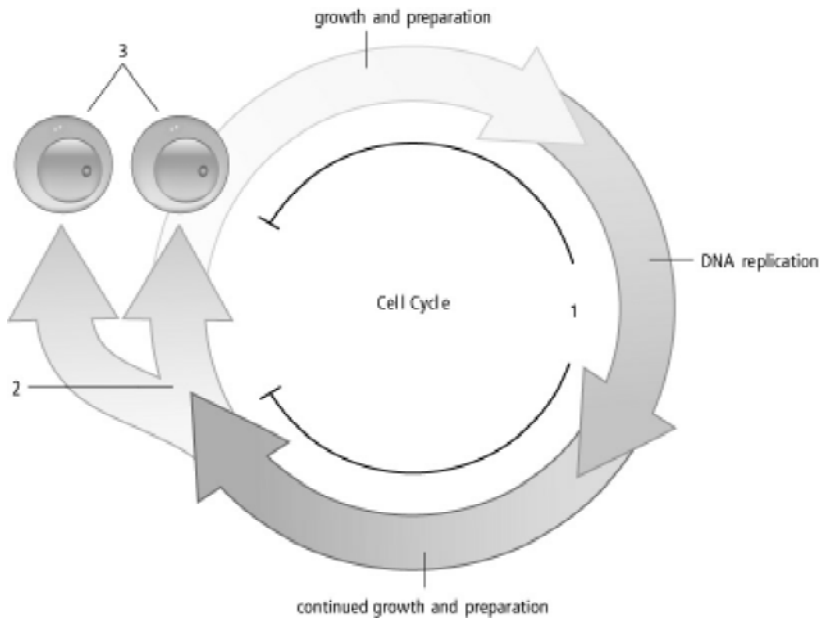
- a. I and II
- b. I and III
- c. I, II, and IV
- d. I, II, III, and IV



35. As part of an experiment, Joel set up the circuit illustrated above. When he closed the switch, nothing happened. Where does the problem lie?
- The lamp is in the wrong place relative to the switch.
  - The motor is in the wrong place relative to the switch.
  - The battery is improperly connected.
  - The lamp and motor are not connected.
36. The organelle that is nicknamed the "powerhouse" of the cell because it changes glucose into energy is the
- endoplasmic reticulum.
  - mitochondria.
  - nucleus.
  - vacuole.
37. The part of the cell that controls the movement of materials into and out of the cell is the
- nucleus.
  - cell membrane.
  - vacuole.
  - cytoplasm.
38. The part of the green plant cell that produces food for the cell and makes it appear green is called the
- chloroplast.
  - Golgi body.
  - mitochondrion.
  - vacuole.
39. Where in the cell are the chromosomes located?
- chloroplasts
  - Golgi bodies
  - nucleus
  - vacuoles
40. How many chromosomes do human beings have in each of their body cells?
- 23
  - 46
  - 52
  - 92
41. A gene is
- another name for a chromosome.
  - a section of DNA that codes for a specific protein.
  - a tightly coiled strand of DNA.
  - produced in the Golgi body.
42. The "genetic code" is made up of
- the arrangement of sugar and phosphate groups along the DNA molecule.
  - the sequence of bases along the DNA molecule.
  - the pairs of chromosomes in a cell.
  - the proteins that make up a particular stretch of DNA.
43. In the DNA molecule, the nitrogen bases are always found in pairs. The base A pairs with
- the base C.
  - the base T.
  - the base G.
  - another base A.

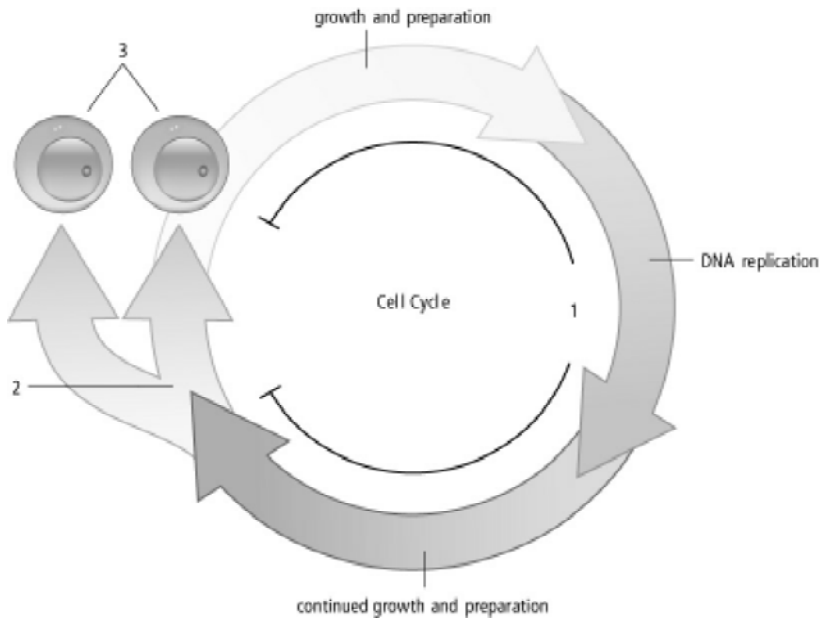


- \_\_\_ 44. When a cell is preparing to reproduce, the chromatin in the nucleus forms into
- |                           |                      |
|---------------------------|----------------------|
| a. chromosomes.           | c. genes.            |
| b. deoxyribonucleic acid. | d. ribonucleic acid. |
- \_\_\_ 45. One side of a gene segment is composed of the following bases: GTGCAATCGCTT. What would the bases on the other side of the ladder be?
- |                 |                 |
|-----------------|-----------------|
| a. GTGCAATCGCTT | c. CACGTTAGCGAA |
| b. ACATGGCTATCC | d. TGTACCGATAGG |
- \_\_\_ 46. New body cells (e.g., skin, muscle) are produced by
- |                   |             |
|-------------------|-------------|
| a. eggs.          | c. meiosis. |
| b. fertilization. | d. mitosis. |
- \_\_\_ 47. Stage 2 of the cell cycle is labelled on the diagram below. What is the name of this stage?



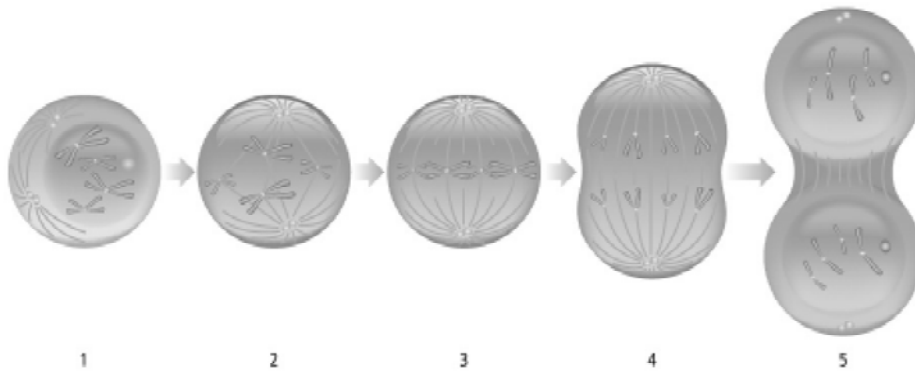
- |                |              |
|----------------|--------------|
| a. cytokinesis | c. mitosis   |
| b. interphase  | d. telophase |

\_\_\_ 48. The process in stage 3 in the cell cycle diagram below shows the process of

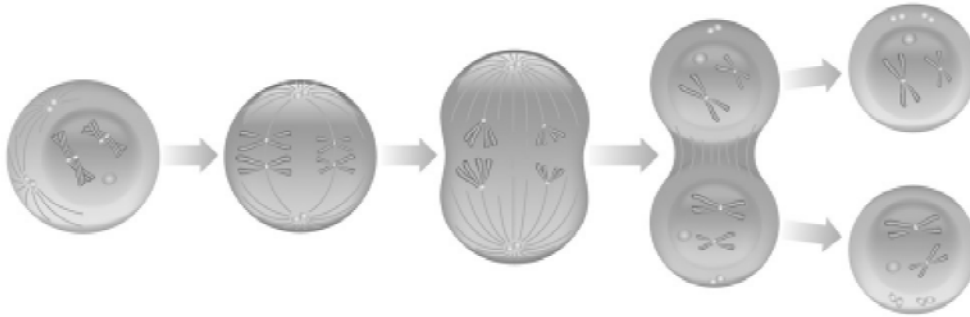


- a. cytokinesis.
- b. interphase.
- c. mitosis.
- d. replication.

\_\_\_ 49. The diagram below shows



- a. the cell cycle.
- b. meiosis.
- c. the steps of metaphase.
- d. mitosis.



- \_\_\_ 50. Which process is shown in the illustration above?
- fertilization
  - genetic engineering
  - meiosis
  - mitosis
- \_\_\_ 51. Meiosis is often referred to as reduction division because
- the daughter cells are smaller than the mother cell.
  - the total number of cells is reduced after meiosis.
  - the daughter cells have half the number of chromosomes.
  - the total number of chromosomes is reduced by two.
- \_\_\_ 52. A cell produced by meiosis has
- half as many chromosomes as the mother cell.
  - twice as many chromosomes as the mother cell.
  - the same number of chromosomes as the mother cell.
  - the same number of chromosomes as the mother cell, but each cell is half its original size.
- \_\_\_ 53. How many chromosomes are there in the nucleus of a human sperm cell?
- three
  - 22
  - 23
  - 46
- \_\_\_ 54. Each inherited characteristic is determined by genes passed on from
- the mother and her parents.
  - the father and his parents.
  - the father and mother.
  - the mother only.
- \_\_\_ 55. Which of these is a gamete?
- embryo
  - sperm
  - spore
  - zygote
- \_\_\_ 56. A zygote is
- a reproductive cell.
  - formed when embryo cells divide.
  - a fertilized cell.
  - contained within the pollen of a plant.
- \_\_\_ 57. Asexual reproduction is a process that requires
- only one parent, and produces many offspring, all different.
  - only one parent, and produces offspring identical to or very much like the parent.
  - two parents, and produces offspring very much like the parents.
  - two parents, and produces many offspring, all different.

- \_\_\_\_\_ 58. Asexual and sexual reproduction are different in that
- asexual reproduction involves two parents while sexual reproduction involves only one.
  - asexual reproduction involves one parent while sexual reproduction involves two parents.
  - asexual reproduction results in offspring that are different from each other, while sexual reproduction results in identical offspring.
  - offspring produced asexually are different from their parents and offspring produced sexually are identical to their parents.
- \_\_\_\_\_ 59. Sexual reproduction
- creates variations among individuals.
  - produces genetically identical individuals.
  - enables organisms to produce many offspring very quickly.
  - is found only in animals.
- \_\_\_\_\_ 60. Which of the following is a source of variation in sexual reproduction?
- The random division of chromosome pairs into gametes
  - The duplication of genetic material before mitosis
  - The combination of gametes from two parents
  - Both A and C
- \_\_\_\_\_ 61. Which of the following best describes binary fission?
- A form of asexual reproduction in which spores are created
  - The transfer of genetic material directly from one cell to another
  - The fusing together of two cells to form one
  - A form of asexual reproduction through cell division
- \_\_\_\_\_ 62. When an organism undergoes binary fission,
- many offspring may be produced.
  - each of the offspring is identical to the parent organism.
  - each new cell has half of the genetic material of the parent.
  - the result is genetic recombination but not reproduction.
- \_\_\_\_\_ 63. Mitosis is the process by which
- a body cell makes an exact duplicate of itself.
  - gametes are produced in the ovaries or testes.
  - sperm are produced.
  - a zygote is produced.
- \_\_\_\_\_ 64. Reproduction by budding occurs when
- a tree produces new green shoots in springtime.
  - planaria are cut in half and grow back the missing parts.
  - amoebas divide in half.
  - yeast cells produce new smaller cells that break off and float away.
- \_\_\_\_\_ 65. Fragmentation is an organism's ability to
- grow a new part to replace one that has been broken off.
  - make a lot of offspring by producing huge numbers of sperm and eggs.
  - produce new organisms from pieces of the original organism.
  - divide in half to form two new organisms.

\_\_\_ 66. Use the following information to answer the next question.

When Niels Bohr studied electrons, he found that electrons orbit the nucleus of the atom in fixed energy levels. Each energy level was found to accommodate a certain number of electrons but no more.

Based on Niels Bohr's study of electrons, what would you expect to happen to an electron in a neon atom when electricity is added to neon gas?

- the electron would jump to a higher energy level
- the electron would drop to a lower energy level
- the electron would stay in its original energy level, since electrons cannot move between levels
- the electron would jump to a higher energy level, then drop back to its original level

Use the following information to answer the next question.

In an experiment, students collected the empirical evidence for elements W to Z, which is recorded in the table below.

#### Physical Properties of Elements

Element	Appearance at SATP	Malleability	Electrical Conductivity
W	colourless gas	no	no
X	shiny, orange solid	yes	yes
Y	yellow solid	no	no
Z	shiny, silver solid	yes	yes

- \_\_\_ 67. Which of the elements are metals?
- W and X
  - X and Y
  - Y and Z
  - X and Z
- \_\_\_ 68. Which of the elements is likely copper?
- W
  - X
  - Y
  - Z

Use the following information to answer the next question.

#### Atomic Features of Elements

Element	Number of Electrons	Number of Protons	Mass Number
M	20	20	40
N	8	8	16
O	11	11	23
P	27	27	59
Q	10	10	20
R	33	33	75

- \_\_\_ 69. How many neutrons does element P have in its atom?
- five
  - 27
  - 32
  - 59

- \_\_\_\_\_ 70. Which element has the greatest number of neutrons in its atom?
- |      |      |
|------|------|
| a. M | c. Q |
| b. P | d. R |
- \_\_\_\_\_ 71. How many neutrons does element R have in its atom?
- |       |       |
|-------|-------|
| a. 22 | c. 42 |
| b. 33 | d. 75 |

*Use the following information to answer the next question.*

Many atomic models were developed in the 19th and 20th centuries. Four of these models are given below:

- |   |
|---|
| <p>A. Plum pudding: An atom is a positive sphere embedded with negative electrons.</p> <p>B. Billiard ball: An atom is a solid sphere similar to a billiard ball.</p> <p>C. Planet Saturn: An atom is compared with the planet Saturn, where the planet represents the positively charged part of the atom and the rings represent the negatively charged electrons.</p> <p>D. Solar system: An atom consists of a tiny positively charged nucleus, surrounded mostly by empty space containing negative electrons.</p> |
|---|

- \_\_\_\_\_ 72. Which model was created by the English physicist J.J. Thomson?
- |      |      |
|------|------|
| a. A | c. C |
| b. B | d. D |
- \_\_\_\_\_ 73. Which atomic model was created by the New Zealand-born physicist Ernest Rutherford?
- |      |      |
|------|------|
| a. A | c. C |
| b. B | d. D |
- \_\_\_\_\_ 74. Which atomic model was created by the English scientist John Dalton?
- |      |      |
|------|------|
| a. A | c. C |
| b. B | d. D |
- \_\_\_\_\_ 75. Which of the following is *not* part of the particle model of matter?
- |  |
|--|
| a. All matter is made up of extremely tiny particles.  |
| b. Particles are always moving and are attracted to each other.  |
| c. Each pure substance has its own kind of particles, which are different from the particles of other pure substances. |
| d. Some mixtures of particles will scatter light.  |
- \_\_\_\_\_ 76. Copper(II) sulfate can cause burns to the skin. Which word below best describes this characteristic?
- |                 |               |
|-----------------|---------------|
| a. combustible  | c. infectious |
| b. biohazardous | d. corrosive  |
- \_\_\_\_\_ 77. What is a synonym for the change of state known as freezing?
- |                   |                 |
|-------------------|-----------------|
| a. fusion         | c. sublimation  |
| b. solidification | d. vaporization |
- \_\_\_\_\_ 78. At its boiling point, a liquid becomes a
- |            |            |
|------------|------------|
| a. gas.    | c. solid.  |
| b. liquid. | d. plasma. |

- \_\_\_\_\_ 79. Which of the following does *not* accurately describe a solid?
- The particles of a solid cannot move around freely.
  - The particles that make up solids have enough energy to pull away from one another.
  - When poured, some solids will form a pile.
  - Solids have a definite volume.
- \_\_\_\_\_ 80. Which of the following changes is always evidence of a chemical reaction?
- The reactants change state.
  - The product has physical properties that differ from those of the reactants.
  - The product has chemical properties that differ from those of the reactants.
  - A gas is released.
- \_\_\_\_\_ 81. Which of the following is the best description of the noble gases?
- They are very reactive because they have full valence shells.
  - They are very unreactive because they have full valence shells.
  - They are very reactive because they have partially filled valence shells.
  - They are very unreactive because they have partially filled valence shells.
- \_\_\_\_\_ 82. Which of the following is *not* a chemical family?
- alkaline earth metals
  - noble gases
  - halogens
  - alkali metals
- I and IV
  - II and III
  - None is a chemical family.
  - All are chemical families.
- \_\_\_\_\_ 83. What do halogens and alkali metals have in common?
- Both tend to lose an electron when forming a compound.
  - Both have an odd number of valence electrons.
  - Both are unlikely to take part in chemical changes.
  - Both tend to gain an electron when forming a compound.
- \_\_\_\_\_ 84. Which of the following element symbols is not correct?
- S for sulfur
  - Ag for silver
  - So for sodium
  - Pb for lead
  - F for fluorine
  - Zi for zinc
- III and VI
  - I and V
  - II and IV
  - I and VI
- \_\_\_\_\_ 85. Which of the following best describes alkaline earth metals?
- They are highly reactive with most elements.
  - They are unreactive with other elements.
  - They are less reactive than alkali metals.
  - They form a chemical family with alkali metals.
- \_\_\_\_\_ 86. Halogen atoms react quite vigorously with almost every other element. Which of the following is *not* a halogen?
- fluorine
  - krypton
  - iodine
  - chlorine

- \_\_\_\_\_ 87. An unknown element has the following properties: it does not conduct heat, it is brittle, and it appears very dull. Which of the following is true?
- I. The element could be a non-metal.
  - II. The element could be a metal.
  - III. The element could be a metalloid.
- a. I
  - b. I and III
  - c. II
  - d. III
- \_\_\_\_\_ 88. What criteria did Mendeleev use to organize the elements in the first periodic table?
- a. atomic masses
  - b. chemical properties
  - c. physical properties
  - d. all of the above

16 <b>S</b> 32.1	17 <b>Cl</b> 35.5	18 <b>Ar</b> 39.9
34 <b>Se</b> 79.0		36 <b>Kr</b> 83.8
52 <b>Te</b> 127.6	53 <b>I</b> 126.9	54 <b>Xe</b> 131.3

- \_\_\_\_\_ 89. From the information presented in the partial periodic table above, which of the following properties could you predict of the missing element?
- I. an atomic number of 35
  - II. an atomic mass of 81.2
  - III. the presence of 35 electrons
  - IV. the presence of 35 neutrons
  - V. the presence of an unpaired electron
- a. I and III
  - b. It would have similar properties to sodium since they are in the same family.
  - c. I, III, and V
  - d. I, II, and IV
- \_\_\_\_\_ 90. What does the atomic number of an element represent?
- a. the number of electrons in the nucleus
  - b. the number of protons in the nucleus
  - c. the number of neutrons in the nucleus
  - d. the number of protons and neutrons in the nucleus
- \_\_\_\_\_ 91. Which of the following contains both ionic and covalent bonds?
- a. NaOH
  - b. NaCl
  - c. H<sub>2</sub>O
  - d. AlBr<sub>3</sub>





## Science 9 Final Exam Answer Section

### MULTIPLE CHOICE

- |     |  |  |                |   |
|-----|--|--|----------------|---|
| 1.  | ANS: B<br>LOC: A1  | PTS: 1<br>TOP: Safety in the Science Classroom       | DIF: Easy      | OBJ: Section 1.1<br>KEY: lab safety                     |
| 2.  | ANS: A<br>LOC: A1  | PTS: 1<br>TOP: Safety in the Science Classroom       | DIF: Average   | OBJ: Section 1.1<br>KEY: poisonous   WHMIS              |
| 3.  | ANS: C<br>LOC: A1  | PTS: 1<br>TOP: Safety in the Science Classroom       | DIF: Average   | OBJ: Section 1.1<br>KEY: oxidizer   WHMIS               |
| 4.  | ANS: C<br>LOC: A1  | PTS: 1<br>TOP: Safety in the Science Classroom       | DIF: Average   | OBJ: Section 1.1<br>KEY: WHMIS                          |
| 5.  | ANS: D<br>LOC: A1  | PTS: 1<br>TOP: Safety in the Science Classroom       | DIF: Difficult | OBJ: Section 1.1<br>KEY: WHMIS                          |
| 6.  | ANS: A<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Difficult | OBJ: Section 7.1<br>KEY: properties of electric charges |
| 7.  | ANS: D<br>LOC: C5  | PTS: 1<br>TOP: Electric Force                        | DIF: Difficult | OBJ: Section 7.2<br>KEY: laws of static charge          |
| 8.  | ANS: C<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Average   | OBJ: Section 7.1<br>KEY: electron transfer              |
| 9.  | ANS: D<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Average   | OBJ: Section 7.1<br>KEY: electron transfer              |
| 10. | ANS: A<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Average   | OBJ: Section 7.1<br>KEY: electron transfer              |
| 11. | ANS: D<br>LOC: C5  | PTS: 1<br>TOP: Electric Force                        | DIF: Difficult | OBJ: Section 7.2<br>KEY: laws of static charge          |
| 12. | ANS: D<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Easy      | OBJ: Section 7.1<br>KEY: insulator                      |
| 13. | ANS: B<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Easy      | OBJ: Section 7.1<br>KEY: conductors                     |
| 14. | ANS: C<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Easy      | OBJ: Section 7.1<br>KEY: electron transfer              |
| 15. | ANS: A<br>LOC: C5  | PTS: 1<br>TOP: Static Charge                         | DIF: Average   | OBJ: Section 7.1<br>KEY: charge in the atom             |
| 16. | ANS: D<br>LOC: C6  | PTS: 1<br>TOP: Electric Current                      | DIF: Easy      | OBJ: Section 8.2<br>KEY: ammeter                        |
| 17. | ANS: A<br>LOC: C6  | PTS: 1<br>TOP: Electric Current                      | DIF: Easy      | OBJ: Section 8.2<br>KEY: current                        |
| 18. | ANS: A<br>LOC: C6  | PTS: 1<br>TOP: Electric Current                      | DIF: Average   | OBJ: Section 8.2<br>KEY: ampere                         |
| 19. | ANS: C<br>LOC: C6  | PTS: 1<br>TOP: Electric Current                      | DIF: Average   | OBJ: Section 8.2<br>KEY: current                        |
| 20. | ANS: D<br>LOC: C6<br>KEY: potential difference   voltage | PTS: 1<br>TOP: Electric Potential Energy and Voltage | DIF: Average   | OBJ: Section 8.1  |

21. ANS: B PTS: 1 DIF: Average OBJ: Section 8.2  
 LOC: C6 TOP: Electric Current KEY: circuit
22. ANS: C PTS: 1 DIF: Average OBJ: Section 8.3  
 LOC: C6 TOP: Resistance and Ohm's Law KEY: measuring resistance
23. ANS: B PTS: 1 DIF: Easy OBJ: Section 8.3  
 LOC: C6 TOP: Resistance and Ohm's Law KEY: Ohm's law
24. ANS: A PTS: 1 DIF: Easy OBJ: Section 8.3  
 LOC: C6 TOP: Resistance and Ohm's Law KEY: resistance
25. ANS: C PTS: 1 DIF: Average OBJ: Section 8.3  
 LOC: C6 TOP: Resistance and Ohm's Law KEY: Ohm's law
26. ANS: D PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: series circuit | current
27. ANS: C PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: series circuit
28. ANS: D PTS: 1 DIF: Difficult OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit
29. ANS: C PTS: 1 DIF: Difficult OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: series circuit
30. ANS: B PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit
31. ANS: B PTS: 1 DIF: Difficult OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: series circuit
32. ANS: D PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit
33. ANS: D PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit | series circuit
34. ANS: C PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit | series circuit
35. ANS: C PTS: 1 DIF: Average OBJ: Section 9.1  
 LOC: C7 TOP: Series and Parallel Circuits KEY: parallel circuit
36. ANS: B PTS: 1 DIF: Average OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: cell | organelle | mitochondria
37. ANS: B PTS: 1 DIF: Average OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: cell | cell membrane
38. ANS: A PTS: 1 DIF: Average OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: chloroplast
39. ANS: C PTS: 1 DIF: Easy OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: chromosomes | cell | nucleus
40. ANS: B PTS: 1 DIF: Easy OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: chromosomes
41. ANS: B PTS: 1 DIF: Average OBJ: Section 4.1  
 LOC: LS-R-01 TOP: The Function of the Nucleus within the Cell  
 KEY: gene | chromosome | DNA

42. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 4.1  
 LOC: LS-R-01           TOP: The Function of the Nucleus within the Cell  
 KEY: genetic | code | bases | DNA | molecule
43. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 4.1  
 LOC: LS-R-01           TOP: The Function of the Nucleus within the Cell  
 KEY: DNA | molecule | nitrogen | base
44. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 4.1  
 LOC: LS-R-01           TOP: The Function of the Nucleus within the Cell  
 KEY: chromatin | chromosomes
45. ANS: C                   PTS: 1                   DIF: Average           OBJ: Section 4.1  
 LOC: LS-R-01           TOP: The Function of the Nucleus within the Cell  
 KEY: bases | gene
46. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 5.1  
 LOC: LS-R-01           TOP: The Cell Cycle and Mitosis           KEY: mitosis
47. ANS: C                   PTS: 1                   DIF: Average           OBJ: Section 5.1  
 LOC: LS-R-01           TOP: The Cell Cycle and Mitosis           KEY: cell cycle | mitosis
48. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 5.1  
 LOC: LS-R-01           TOP: The Cell Cycle and Mitosis           KEY: cytokinesis
49. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 5.1  
 LOC: LS-R-01           TOP: The Cell Cycle and Mitosis           KEY: mitosis
50. ANS: C                   PTS: 1                   DIF: Average           OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: meiosis
51. ANS: C                   PTS: 1                   DIF: Difficult           OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: meiosis | chromosomes
52. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: meiosis | chromosomes
53. ANS: C                   PTS: 1                   DIF: Easy               OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: chromosomes | sperm
54. ANS: C                   PTS: 1                   DIF: Easy               OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: inherit | genes
55. ANS: B                   PTS: 1                   DIF: Easy               OBJ: Section 6.1  
 LOC: LS-R-01           TOP: Meiosis           KEY: gamete | sperm
56. ANS: C                   PTS: 1                   DIF: Easy               OBJ: Section 6.1  
 LOC: LS-R-02           TOP: Meiosis           KEY: zygote | fertilized cell
57. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 5.2  
 LOC: LS-R-03           TOP: Asexual Reproduction           KEY: asexual | reproduction | parent
58. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 6.2  
 LOC: LS-R-03           TOP: Sexual Reproduction  
 KEY: sexual reproduction | asexual reproduction
59. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 6.2  
 LOC: LS-R-03           TOP: Sexual Reproduction           KEY: sexual reproduction
60. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 6.2  
 LOC: LS-R-03           TOP: Sexual Reproduction  
 KEY: sexual reproduction | gamete | chromosome
61. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 5.2  
 LOC: LS-R-03           TOP: Asexual Reproduction  
 KEY: binary fission | asexual | cell division

62. ANS: B PTS: 1 DIF: Average OBJ: Section 5.2  
 LOC: LS-R-03 TOP: Asexual Reproduction KEY: binary fission | offspring
63. ANS: A PTS: 1 DIF: Average OBJ: Section 5.1  
 LOC: LS-R-01 TOP: The Cell Cycle and Mitosis KEY: mitosis
64. ANS: D PTS: 1 DIF: Average OBJ: Section 5.2  
 LOC: LS-R-01 TOP: Asexual Reproduction KEY: budding
65. ANS: C PTS: 1 DIF: Average OBJ: Section 5.2  
 LOC: LS-R-03 TOP: Asexual Reproduction KEY: fragmentation
66. ANS: D PTS: 1 DIF: Difficult OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: Bohr | electron
67. ANS: D PTS: 1 DIF: Average OBJ: Section 1.2  
 LOC: C1 TOP: Investigating Matter KEY: metal
68. ANS: B PTS: 1 DIF: Difficult OBJ: Section 1.2  
 LOC: C1 TOP: Investigating Matter KEY: metal
69. ANS: C PTS: 1 DIF: Average OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: neutron
70. ANS: D PTS: 1 DIF: Difficult OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: neutron
71. ANS: C PTS: 1 DIF: Average OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: neutron
72. ANS: A PTS: 1 DIF: Average OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: Thomson
73. ANS: D PTS: 1 DIF: Average OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: Rutherford
74. ANS: B PTS: 1 DIF: Average OBJ: Section 1.3  
 LOC: C1 TOP: Atomic Theory KEY: Dalton
75. ANS: D PTS: 1 DIF: Easy OBJ: Section 1.2  
 LOC: C4 TOP: Investigating Matter KEY: particle model
76. ANS: D PTS: 1 DIF: Average OBJ: Section 1.1  
 LOC: A1 TOP: Safety in the Science Classroom KEY: corrosive | WHMIS
77. ANS: B PTS: 1 DIF: Easy OBJ: Section 1.2  
 LOC: C4 TOP: Investigating Matter KEY: solidification | change of state
78. ANS: A PTS: 1 DIF: Easy OBJ: Section 1.2  
 LOC: C4 TOP: Investigating Matter KEY: boiling point | change of state
79. ANS: B PTS: 1 DIF: Average OBJ: Section 1.2  
 LOC: C4 TOP: Investigating Matter KEY: kinetic molecular theory
80. ANS: C PTS: 1 DIF: Average OBJ: Section 1.2  
 LOC: C4 TOP: Investigating Matter KEY: chemical changes
81. ANS: B PTS: 1 DIF: Average OBJ: Section 2.2  
 LOC: C2 TOP: The Periodic Table and Chemical Properties  
 KEY: periods and families
82. ANS: D PTS: 1 DIF: Easy OBJ: Section 2.2  
 LOC: C2 TOP: The Periodic Table and Chemical Properties  
 KEY: periods and families
83. ANS: B PTS: 1 DIF: Difficult OBJ: Section 2.2  
 LOC: C2 TOP: The Periodic Table and Chemical Properties  
 KEY: chemical family

84. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 2.1  
LOC: C3                   TOP: Elements           KEY: chemical symbols
85. ANS: C                   PTS: 1                   DIF: Difficult           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: periods and families
86. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: periods and families
87. ANS: B                   PTS: 1                   DIF: Difficult           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: metals | non-metals | metalloids
88. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: the periodic table
89. ANS: C                   PTS: 1                   DIF: Average           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: the periodic table
90. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 2.2  
LOC: C2                   TOP: The Periodic Table and Chemical Properties  
KEY: the periodic table
91. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 3.1  
LOC: C3                   TOP: Compounds        KEY: molecules | polyatomic ions
92. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 3.2  
LOC: C3                   TOP: Names and Formulas of Ionic Compounds  
KEY: multivalent metal compounds
93. ANS: A                   PTS: 1                   DIF: Average           OBJ: Section 3.1  
LOC: C1                   TOP: Compounds        KEY: covalent compounds
94. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 3.2  
LOC: C3                   TOP: Names and Formulas of Ionic Compounds  
KEY: chemical name
95. ANS: C                   PTS: 1                   DIF: Average           OBJ: Section 3.1  
LOC: C1                   TOP: Compounds        KEY: ions
96. ANS: D                   PTS: 1                   DIF: Average           OBJ: Section 3.2  
LOC: C3                   TOP: Names and Formulas of Ionic Compounds  
KEY: chemical name
97. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 3.2  
LOC: C3                   TOP: Names and Formulas of Ionic Compounds  
KEY: ionic compounds
98. ANS: B                   PTS: 1                   DIF: Easy                OBJ: Section 3.2  
LOC: C3                   TOP: Names and Formulas of Ionic Compounds  
KEY: chemical change | charge
99. ANS: D                   PTS: 1                   DIF: Easy                OBJ: Section 3.3  
LOC: C4                   TOP: Physical and Chemical Changes    KEY: chemical change
100. ANS: B                   PTS: 1                   DIF: Average           OBJ: Section 3.3  
LOC: C4                   TOP: Physical and Chemical Changes    KEY: chemical change | physical change