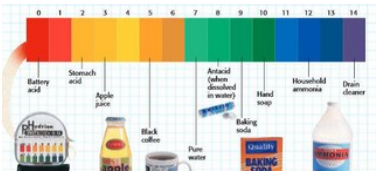
Physical Science Midterm 2015 - Part II

Score:

1. SC.8.P.8.9 Water is a neutral substance with a pH of 7. Marc was asked to sequence the following common household substances according their pH. When placed in order from highest to lowest pH, which of the following substances is closest to neutral and is a base?



(A) A. Baking Soda

(B) B. Black Coffee

(C) C. Apple Juice

(D) D. Antacid

2. SC.8.P.8.9 Mixtures are two or more substances that are not chemically combined. Which of the following statements is true about a mixture?

(A) A. Pepsi is a heterogeneous mixture.

(B) B. Milk is a pure substance, not a mixture.

(C) C. Cranberry juice is a homogeneous mixture.

(D) D. Oatmeal with raisins is a homogeneous mixture.

3. SC.8.P.8.9 A water molecule is made up of one oxygen and two hydrogen atoms. Why is water considered a pure substance?

(A) A. Each water molecule has an identical composition and properties.

(B) B. Water can be combined with other substances by physical means.

(C) C. Water molecules are made up of different types of atoms.

(D) D. Water can not be broken down by physical means.

4. SC.8.P.8.7 The nucleus of most atoms is composed of which of the following sub-atomic particles?

(A) A. tightly packed protons.

(B) B. tightly packed neutrons.

(C) C. tightly packed protons and neutrons.

(D) D. loosely connected protons and electrons.

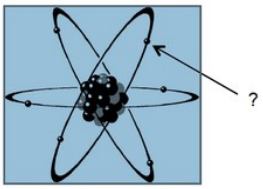
5. SC.8.P.8.7 The diagram below shows a model of the atom. Which subatomic particle does the arrow in the image below identify?

A. electron

B. neutron

C. orbital

D. proton



6. SC.8.P.8.7 According to the scientific theory of atoms, which of the following statements best describes the location of electrons?

A. in the nucleus of the atom

B. both in the nucleus and around it

C. outside the nucleus in the surrounding electron cloud

D. on the outer edge of the nucleus because they are attracted to the protons

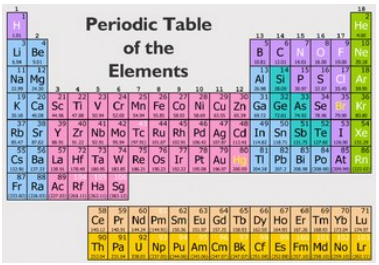
7. SC.8.P.8.6 The periodic table was created by grouping elements according to their properties. An unknown substance was shown to contain a metal element with an atomic mass between 69 and 70. With which of the following elements is it most likely grouped?

A. nitrogen

B. oxygen

C. carbon

D. boron



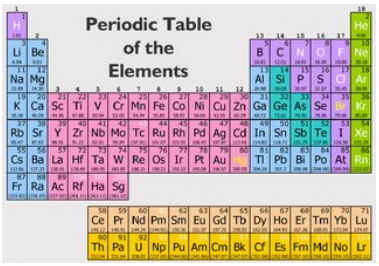
8. SC.8.P.8.6 Which of these elements has physical and chemical properties most similar to Arsenic (As)?

A. germanium (Ge)

B. phosphorus (P)

C. silicon (Si)

D. lead (Pb)



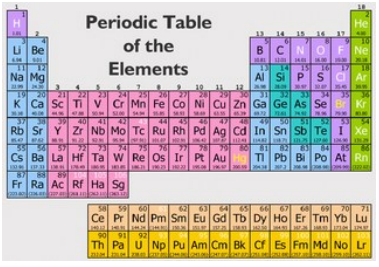
9. SC.8.P.8.6 The element germanium (Ge) was once used in the manufacture of transistors for radios. What other element has similar properties that might be used for the same purpose?

A. Ga

B. Br

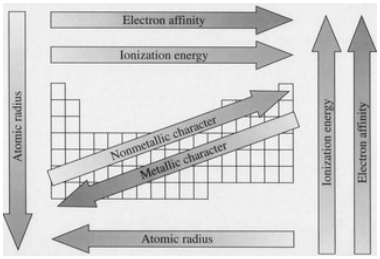
C. Sn

D. O



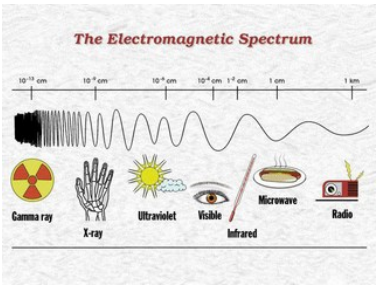
10. SC.8.P.8.6 The properties of the elements exhibit trends or periodicity. These trends can be predicted using
the periodic table. The periodic trend diagram below, shows how properties of elements
increase when following the direction of the arrow.

Using the periodic trend diagram above and the periodic table provided, identify which one
of the properties potassium (K) has that is a larger value than the same property for lithium
(Li)?



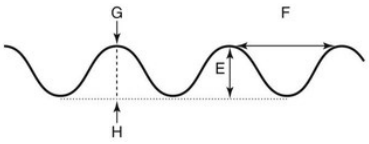
A. A. atomic radius
B. B. electron affinity
C. C. ionization energy
D. D. nonmetallic character

11. SC.7.P.10.1 Waves in the electromagnetic spectrum vary in size from very long to very short.
Which form of electromagnetic energy has the shortest wavelength?



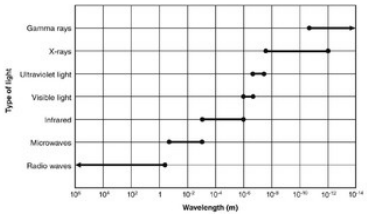
A. A. radio waves
B. B. gamma rays
C. C. infrared waves
D. D. ultraviolet waves

12. SC.7.P.10.1 Waves can be identified in many different ways. Using the diagram below, identify
which property of a wave is shown by the part of the diagram labeled F?



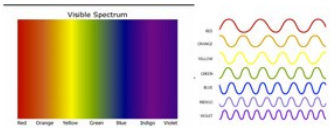
A. A. period
B. B. frequency
C. C. amplitude
D. D. wavelength

13. SC.7.P.10.1 Based on the diagram below, which of the waves listed below has the shortest
wavelength?



A. A. radio waves
B. B. x-ray waves
C. C. infrared waves
D. D. ultraviolet waves

14. SC.7.P.10.1 When white light shines through a prism, the white light is broken apart into the colors of the visible light spectrum as shown in the diagram below. Which statement best describes the characteristics of white light?



(A) A. White light is composed of a spectrum of many different colors.

(B) B. White light is composed of radiation with a wide range of amplitudes.

(C) C. White light is composed of various wavelengths of light not seen by the naked eye.

(D) D. White light is composed of radiation that travels at different speeds producing various colors.

15. SC.7.P.10.3 An earthquake sends out waves in all directions from its source. These waves travel through different materials in the Earth. Properties of a wave change when it moves from one material to another. What property of a wave changes as it moves from one material to another?

(A) A. wavespeed

(B) B. wavelength

(C) C. wave frequency

(D) D. wave amplitude

16. SC.7.P.10.3 During a thunderstorm, you see the lighting before you hear thunder. Which of the following explains this observation?

(A) A. Light travels faster than sound

(B) B. Light has a greater mass than sound

(C) C. Sound has longer wavelengths than light

(D) D. Sound and light travel at the same speed

17. SC.7.P.10.3 Which of the following changes will affect the speed of a wave through a medium?

(A) A. A change in the frequency of the wave.

(B) B. A change in the amplitude of the wave.

(C) C. A change in the material through which the wave travels.

(D) D. The speed of a wave always remain the same regardless of the type of medium.

18. SC.7.P.10.2 Every morning Elsa looks at her image in a shiny flat surface. Which statement below explains the behavior of light that allows Elsa to see herself?

(A) A. Light waves are absorbed by the surface of the object allowing Elsa to see herself.

(B) B. Light waves are reflected from the surface back into Elsa's eyes allowing her to see herself.

C. Light waves are diffracted by the surface of the object creating shine that allows Elsa to see herself.

D. Light waves are refracted by the surface of the object bending the light and allowing Elsa to see herself.

19. SC.7.P.10.2 Ryan played a game of spearing apples with his friends. Ryan missed the apple several times when trying to spear it. Which statement best explains why Ryan may have misjudged the position of the apple?

A. Reflection of the light by the water caused the apple to disappear.

B. Refraction of the light by the water caused the apple to appear in a different position than it actually was.

C. Absorption of the light by the water caused the apple to appear in a different position than it was actually located.

D. Absorption and reflection of the light by the water caused the apple to appear to disappear and reappear in a different location.

20. SC.7.P.10.2 Jackson visited the Grand Canyon with his family. He noticed that when he stood at the edge of the canyon and yelled his brother's name, he could hear his brother's name being repeated. Which of the following best explains why Jackson was able to hear an echo of his brother's name?

A. Sound travels as a wave that can be refracted and reflected by the particles of air around the edge of the canyon creating an echo.

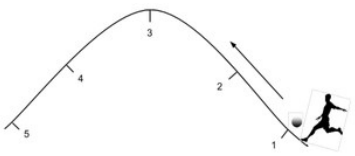
B. Sound travels as a wave that can be absorbed by the walls of the canyon and passed back to Jackson's ear creating an echo.

C. Sound travels as a wave that can be reflected by the walls of the canyon back into Jackson's ear as an echo.

D. Sound travels as a wave that can be refracted by the walls of the canyon creating an echo.

21. SC.8.P.11.2 A ball is rolling up and over a hill. As it moves from point 1 to point 3, the ball slows down and it speeds up as it moves from position 3 to position 5. When is the potential energy of the ball being transformed into kinetic energy?

A. It is not being transformed at any time because potential energy cannot be transformed into kinetic energy.



B. The entire time the ball is rolling from position 1 to position 5

C. Only when the ball rolls from position 1 to position 3

D. Only when the ball rolls from position 3 to position 5

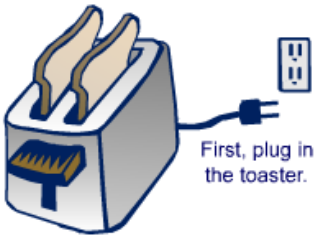
22. SC.7.P.11.2 Making toast involves many energy transformations. As the electricity is forced through the wires, the wires begin to heat up and glow very hot. It is these hot loops of wire that cause the bread to brown making your toast. Which of the following best describes the energy transformations that occur in a toaster?

A. Chemical energy electrical energy thermal energy

B. Thermal energy chemical energy electrical energy

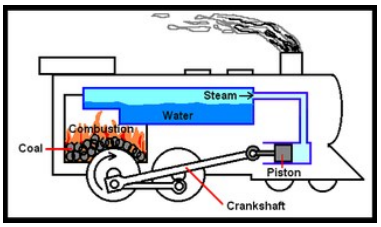
C. Electrical energy chemical energy thermal energy

D. Electrical energy thermal energy chemical energy



23. SC.7.P.11.3 Maria analyzed the different types of energy transfers and transformations involved in powering a train using coal as fuel as shown in the diagram below. Which of the statement below best describes how the Law of Conservation of Energy plays a role in the powering the train?

A. The chemical energy in the coal is converted to thermal and light energy that is transferred to the water creating steam that moves the piston to power the train.



B. The mechanical energy of the crankshaft is converted to chemical energy in the coal and transferred to the water creating steam to power the train.

C. The chemical energy in the water is converter to kinetic energy in steam that heats the coal creating mechanical energy to power the train.

D. The mechanical energy in the coal is converted to chemical energy that is transferred to the steam to power the train.

24. SC.7.P.11.3 According to the law of conservation of energy, in theory, a bouncy ball should never stop bouncing. However, we know that it eventually stops. Which statement below best explains why the ball stops bouncing?

A. Some energy gets converted into light energy and escapes into the surroundings.

B. Some energy gets converted into chemical energy and escapes into the surroundings.

C. Some energy gets converted into mechanical energy and escapes into the surroundings.

D. Some energy gets converted into sound and thermal energy and escapes into the surroundings.

25. SC.8.N.1.1 Which Science course are you currently enrolled in?

A General Science

B Life Science

C Physical Science

D Earth Science