Science 10 Review UNIT C BIOLOGY

Name: _Key._

Read each question carefully. Circle the BEST answer and fill in the blanks.

Use the following information to answer the next three (3) questions.

Louis Pasteur performed an experiment in which he had several flasks of broth at the same temperature and same light conditions. He had one flask that allowed dust to enter and a second flask that did not allow dust to enter. Pasteur found that mould grew in the flask that allowed dust to enter but not in the one that did not allow dust to enter. He then allowed dust to enter the second flask and found, later, that mould grew in the second flask.

1. The conditions of same temperature and light conditions are called
   A. responding variables
   B. controlled variables
   C. manipulated variables
   D. experimental control

2. The flask that was open throughout the experiment is called the
   A. responding variable
   B. controlled variable
   C. manipulated variable
   D. experimental control

3. The mould that grew in the flask is called the
   A. responding variable
   B. controlled variable
   C. manipulated variable
   D. experimental control

4. Which of the following statements is not part of the cell theory?
   A. Cells come from pre-existing cells.
   B. Cells can form spontaneously from non-living matter.
   C. All life functions take place inside the cell.
   D. All living things are made up of one or more cells.

5. A system that is able to exchange matter and energy with its surroundings is called a(n)
   A. basic system
   B. open system
   C. free system
   D. empty system

6. Which statement is true for both plant and animal cells?
   A. They have a cell wall.
   B. They have chloroplasts.
   C. They have a Golgi apparatus.
   D. They have very large water vacuoles.

7. The solvent that provides the environment for all biological reactions is
   - A. water
   - B. cytoplasm
   - C. nucleic acid
   - D. oxygen

8. The cell membrane consists of
   - A. two layers of lipids, each with a phosphate group attached
   - B. sugar molecules attached to a protein layer
   - C. two layers of carbohydrates attached to a lipid layer
   - D. a single layer of lipids with a phosphate group attached on each side

9. Another name for the cell membrane is
   - A. phospholipid bilayer ~~membrane~~
   - B. fluid-mosaic ~~membrane~~ model
   - C. lipid membrane ✗
   - D. plasma membrane

10. Membrane-bound sacs in which digestion occurs are called
    - A. lysosomes
    - B. ribosomes
    - C. mitochondria
    - D. Golgi apparatus

11. Rod-like structures where reactions occur to convert chemical energy in sugars into energy the cell can use are called
    - A. lysosomes
    - B. ribosomes
    - C. mitochondria
    - D. Golgi apparatus

12. Which part of the cell receives substances from the endoplasmic reticulum and prepares them for transport out of the cell?
    - A. lysosomes
    - B. ribosomes
    - C. mitochondria
    - D. Golgi apparatus

13. Match each description or function with the correct structure or term from the following list:
    - A. i. cytoplasm   ii. cell membrane   iii. endoplasmic reticulum
    - B. iv. chloroplast   v. lysosome   vi. central vacuole
    - C. vii. nucleus   viii. lipid   ix. equilibrium

    iii a. a series of small interconnected tubes that branch from the nuclear envelope

    vii b. an organelle that contains the genetic material of the cell and directs all cell activities

    _iv_ c. a structure containing chlorophyll found in plants and some protists

    _vi_ d. a large, membrane-bound structure in a plant cell that causes the cell to become turgid when filled with water

    _i_ e. a gel-like substance inside the cell membrane that contains the nutrients required by cells

    _ii_ f. a protective barrier for the cell

14. The movement of water across a cell membrane that does not require energy is called
    - A. osmosis
    - B. hypertonic diffusion
    - C. facilitated diffusion
    - D. active transport

15. Which factor determines whether movement across a cell membrane is active transport or passive transport?
    - A. energy use
    - B. direction of movement
    - C. the concentration of solutes
    - D. the type of molecule or particle involved

16. A white blood cell engulfing a bacterium is an example of
    - A. osmosis
    - B. exocytosis
    - C. endocytosis
    - D. facilitated diffusion

17. A membrane that allows only certain substances to pass through is a
    - A. porous membrane
    - B. transparent membrane
    - C. impermeable membrane
    - D. semi-permeable membrane

18. Which method allows the cell to move particles against the concentration gradient?
    - A. osmosis
    - B. hypotonic diffusion
    - C. facilitated diffusion
    - D. active transport

19. Small substances soluble in lipids can pass through the cell membrane by
    - A. diffusion
    - B. facilitated diffusion
    - C. active transport
    - D. attaching to carrier proteins

20. A hen's egg with the shell dissolved is placed in a 10% salt solution. Relative to the interior of the egg which has no salt, the salt solution is
    - A. hypotonic
    - B. isotonic
    - C. hypertonic
    - D. semi-permeable

21. A process in which a vesicle fuses with the cell membrane then ruptures to expel wastes to the outside of the cell is known as
    - A. osmosis
    - B. exocytosis
    - C. endocytosis
    - D. plasmolysis

22. Determine whether each statement is true (T) or false (F). Place your answer in the blank space given.

_F_ a. When a cell is put into an isotonic solution, individual water molecules cannot move back and forth across the cell membrane.

_F_ b. When a cell is put into a hypertonic solution, there is a net movement of water molecules across the cell membrane into the cell.

_F_ c. When a cell is put into a hypotonic solution, there is a net movement of water molecules across the cell membrane out of the cell.

_F_ d. The movement of any solvent across a semi-permeable membrane is called osmosis.

_T_ e. Carrier proteins have the ability to change shape and physically move molecules across the cell membrane.

_T_ f. In facilitated diffusion, the concentration of the molecules to be moved across the cell membrane is higher inside the cell.

23. Proteins that stick out of the cell membrane and allow cells to recognize other cells or recognize foreign bodies, such as bacteria, are known as
    A. synthetic proteins
    B. recognition proteins
    C. receptor proteins
    D. model proteins

24. Future treatment for diseases, such as HIV, involves
    A. the removal of receptor proteins from the cell membrane
    B. blocking recognition proteins on the HIV virus
    C. blocking receptor proteins in the cell membrane
   D. adding recognition proteins to the cell membrane

25. Gene therapy for cancer treatment involves
    A. using liposomes to deliver medication to cancer cells
    B. blocking receptor proteins in the cell membranes of cancer cells
    C. using liposomes to introduce DNA to cancer cells so they produce toxins
    D. using liposomes to introduce DNA to healthy cells so they do not become cancerous

26. Read the following list of statements regarding insulin action in the body.
    I. Insulin binds to receptor proteins.
        a. II. Insulin is released by exocytosis.
        b. III. Binding stimulates processes in the cell.
        c. IV. Insulin travels through blood.
            i. Which is the correct order of the statements?
    A. I, II, III, IV
    B. IV, II, I, III
    C. III, I, IV, II
    D. II, IV, I, III

27. Water moves from an area of lower water concentration to an area of higher water concentration in
    A. osmosis
    B. diffusion
    C. reverse osmosis
    D. facilitated diffusion

28. Which statement regarding hemodialysis is **true**?
    A. The dialysate fluid flows into the abdominal cavity through a catheter.
    B. The blood is circulated out of the body for cleansing and then returned.
    C. The patient is able to move around during the procedure.
    D. Wastes move from a region of lower concentration to a region of higher concentration.

glucose solution — Beaker A — water — starch solution — Beaker B
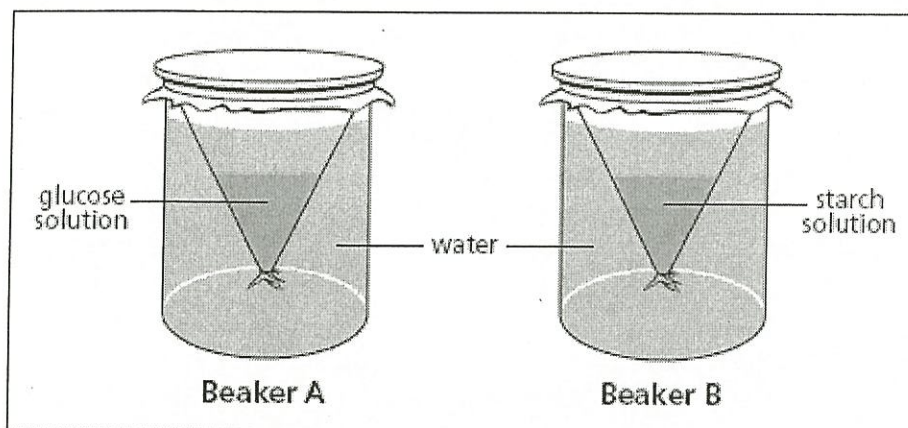
29. What will happen in Beaker A?
    A. Nothing will happen.
    B. Glucose will move from inside the dialysis tubing into the water.
    C. Glucose will move into the dialysis tubing.
    D. Water will move out of the dialysis tubing.

30. What will happen in Beaker B?
    A. Nothing will happen.
    B. Starch will move from inside the dialysis tubing into the water.
    C. Starch will move into the dialysis tubing.
    D. Water will move out of the dialysis tubing.

31. You can check if starch moves across the membrane by performing
    A. an iodine test on the starch solution inside the membrane
    B. an iodine test on the water outside the membrane
    C. a glucose test on the water outside the membrane
    D. a glucose test on the starch solution inside the membrane

32. To operate efficiently, a cell must
    A. be large
    B. have an impermeable membrane
    C. have a large surface area to volume ratio
    D. have a small surface area to volume ratio

33. Which of the following is **true** about a larger cell?
    A. More wastes must leave the cell.
    B. More molecules must move through the membrane.
    C. Distances from the cell membrane to various organelles are greater.
    D. all of the above

34. To reduce the dependence on diffusion, multicellular organisms have
    A. reduced cell size and the number of cells
    B. developed thinner cell membranes
    C. developed other internal transport systems
    D. all of the above

Science 10 Review Assignment

UNIT B PHYSICS

Name: _____

Read each question carefully. Circle the BEST answer and fill in the blanks.

1. Which statement describes an object travelling with uniform velocity?
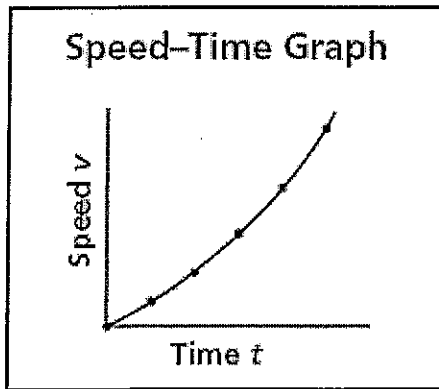A. An object moves with constant speed along a straight path.
B. An object moves with constant speed along a curved path.
C. An object moves so that an imaginary line segment from the object to a reference point changes in length.
D. An object moves so that an imaginary line from the object to a reference point changes in direction.

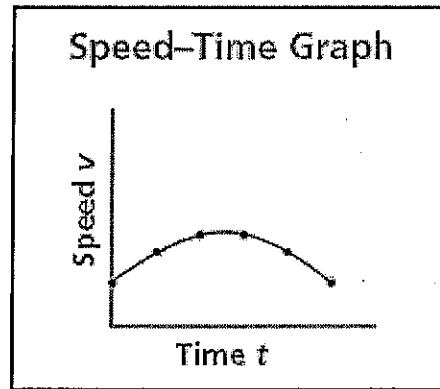2. Which distance–time graph most closely represents an object moving with uniform motion?

A.

Distance–Time Graph

Distance d

Time t

B.

Distance–Time Graph

Distance d

Time t

C.

Distance–Time Graph

Distance d

Time t

D.

Distance–Time Graph

Distance d

Time t
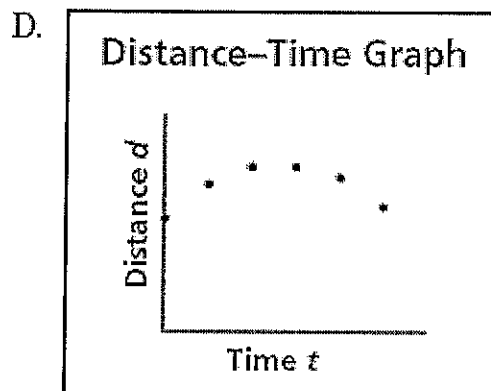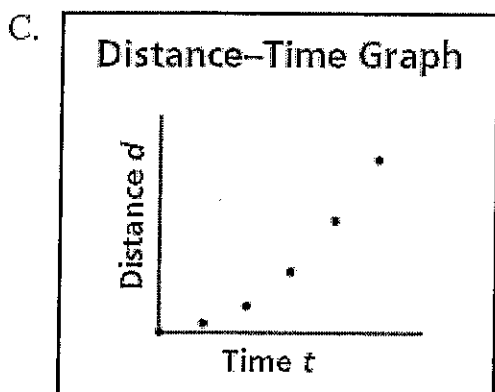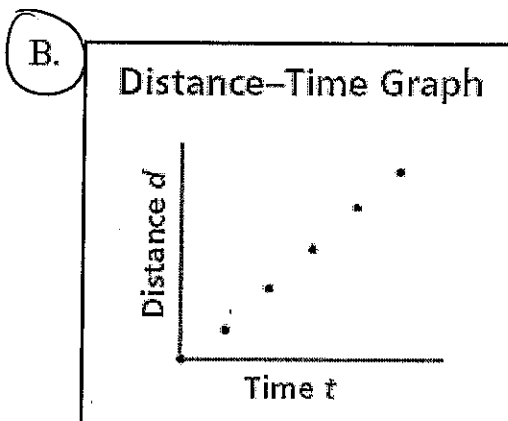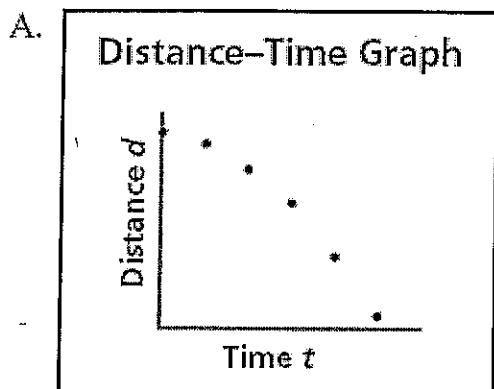
3. Which speed–time graph most closely represents an object travelling with uniform motion?

A.

Speed–Time Graph

Speed v

Time t

B.

Speed–Time Graph

Speed v

Time t

C.

Speed–Time Graph

Speed v

Time t

D.

Speed–Time Graph

Speed v

Time t
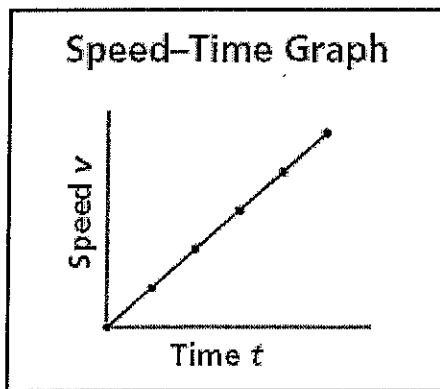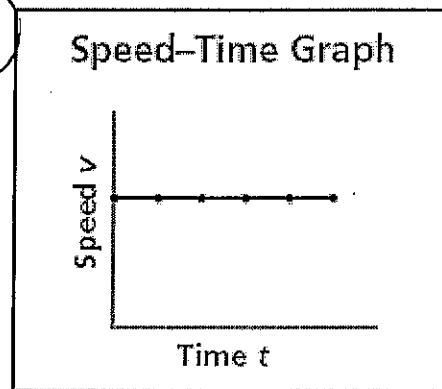
4. What does the area under the line of a speed–time graph represent?
A. acceleration
B. average speed
C. elapsed time
D. distance travelled

Haley was investigating the motion of an object moving on a straight, level air track. She collected distances travelled at regular intervals using a ticker tape. From the resulting data, Haley made the following graph.

Distance-Time Graph
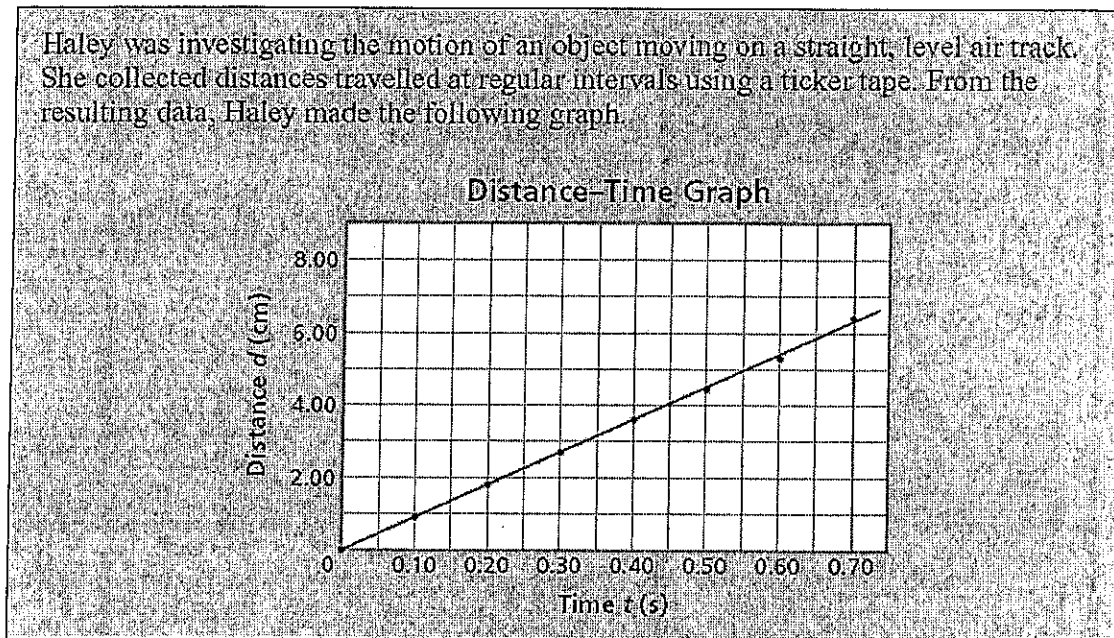
5. What is the slope of the graph?
A. 4.4 cm/s
B. 8.0 cm/s
C. 9.0 cm/s
D. 13.5 cm/s

6. What does the slope of the graph indicate about the object's motion?
A. average speed
B. direction of motion
C. distance travelled
D. average acceleration

Students made the following statements about scalar and vector quantities.

I. A scalar quantity indicates magnitude but no direction.
II. A scalar quantity indicates magnitude and direction.
III. A vector quantity indicates magnitude but no direction.
IV. A vector quantity indicates magnitude and direction.

8. Which statements are correct?
A. statement I only
B. statements I and IV
C. statements II and III
D. statement IV only

7. The following ticker tape shows the data of a moving object.

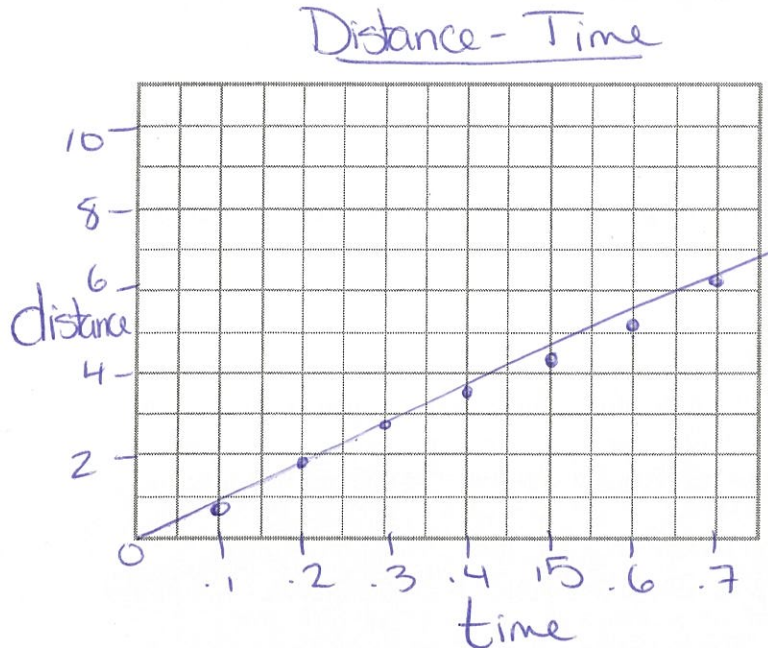| | 0.10 s | | 0.30 s | | 0.50 s | | 0.70 s |
| 0.00 s | | 0.20 s | | 0.40 s | | 0.60 s | |
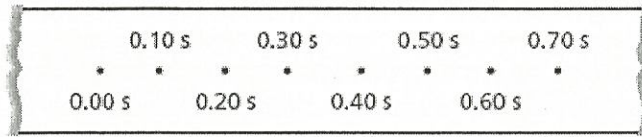
Use this ticker tape to answer the questions that follow. Show your work in the space given.

a. Complete the data table, showing the motion of the object.

Time t (s)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70
Distance d (cm)	0	0.80	1.70	2.55	3.55	4.45	5.30	6.20

b. Draw a distance–time graph based on the data table. Include a line of best fit.

Distance - Time

9. Which quantities of motion are vector quantities?
A. speed and displacement
B. speed and distance travelled
C. velocity and displacement
D. velocity and distance travelled

10. An airplane travelled at an average velocity of 250 km/h [E]. The resulting displacement was 625 km [E]. How long did the trip take?
A. 2.50 h
B. 3.75 h
C. 4.25 h
D. 4.50 h

11. Based on the position–time graph for an object, what is the average velocity of the object for the first 10.0 s?

   A. 1.8 m/s
   B. 1.80 m/s
   C. 1.8 m/s [E]
   D. 1.80 m/s [E]

Position–Time Graph
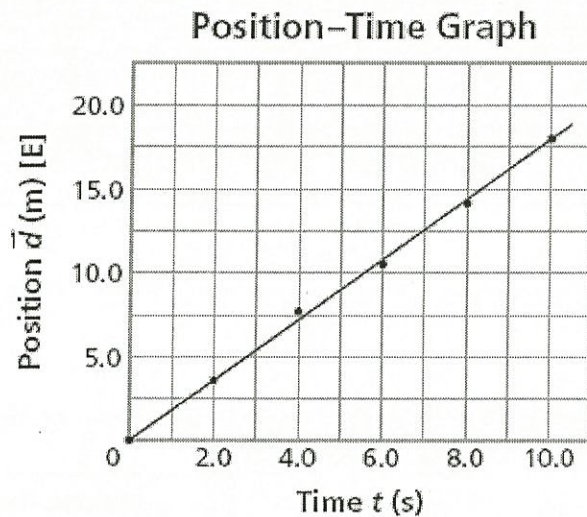
Use the following information to answer questions 12 and 13.

A ball rolled 12.0 m [E] in 10.0 s, hit an obstacle, and rolled straight back. After the collision, the ball rolled 8.00 m [W] in 6.00 s.

12. What was the average speed of the ball?
A. 1.25 m/s
B. 0.250 m/s
C. 1.25 m/s [E]
D. 0.250 m/s [E]

13. What was the average velocity of the ball?
A. 1.25 m/s
B. 0.250 m/s
C. 1.25 m/s [E]
D. 0.250 m/s [E]

14. Which of the following is a vector quantity?

A. speed

B. weight

C. distance travelled

D. mechanical energy

A passenger car can be moving in the following ways:

I.   A car is moving forward while the brake is applied.

II. A car is moving backwards while the brake is applied.

III. A car is in reverse (R) and moving backwards while the gas pedal is pressed down.

IV. A car is in drive (D) and moving forward while the gas pedal is pressed down.

15. In which of these ways would the car be moving with positive acceleration?

A. I only

B. IV only

C. II and III only

D. I and IV only

16. The position–time graph given describes the motion of an object. During which of the intervals (I to IV) is the object undergoing acceleration?
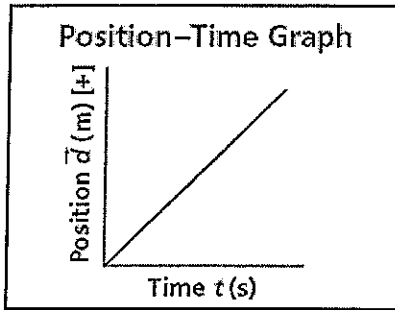
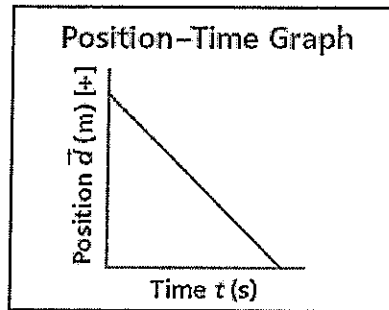A. I only

B. II only

C. I and III only

D. II and IV only

Position–Time Graph
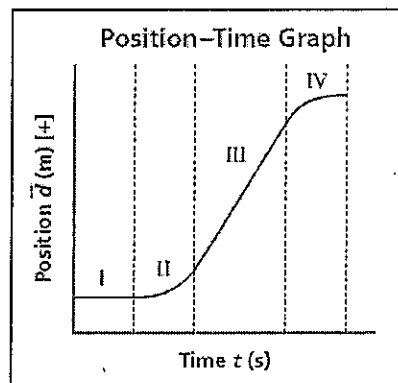
17.

Which position–time graph indicates negative acceleration?

A.

Position–Time Graph

Position $\vec{d}$ (m) [+]

Time t (s)

B.

Position–Time Graph

Position $\vec{d}$ (m) [+]

Time t (s)

C.

Position–Time Graph

Position $\vec{d}$ (m) [+]

Time t (s)
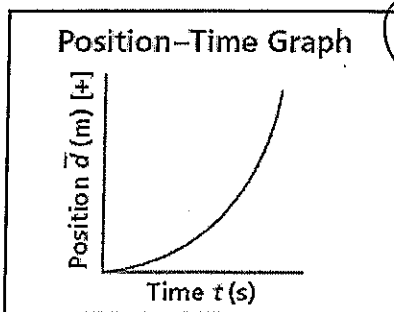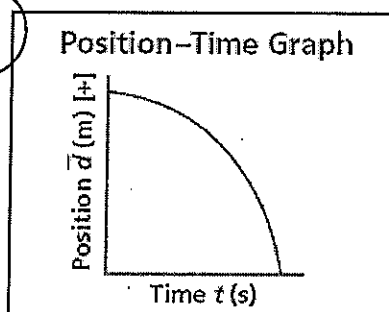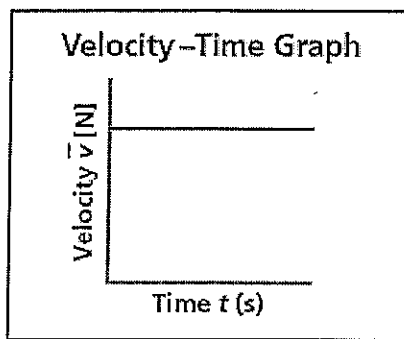
D.

Position–Time Graph

Position $\vec{d}$ (m) [+]

Time t (s)

18.

Which velocity–time graph indicates positive acceleration?

A.

Velocity–Time Graph

Velocity $\vec{v}$ [N]

Time t (s)

B.

Velocity–Time Graph

Velocity $\vec{v}$ [N]

Time t (s)

C.

Velocity–Time Graph

Velocity $\vec{v}$ [N]

Time t (s)

D.

Velocity–Time Graph

Velocity $\vec{v}$ [N]

Time t (s)
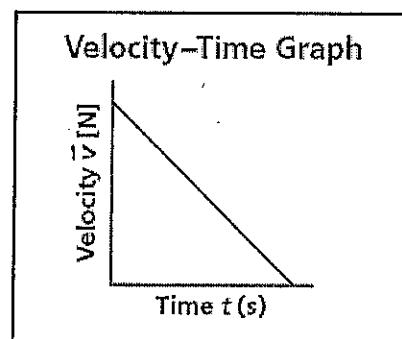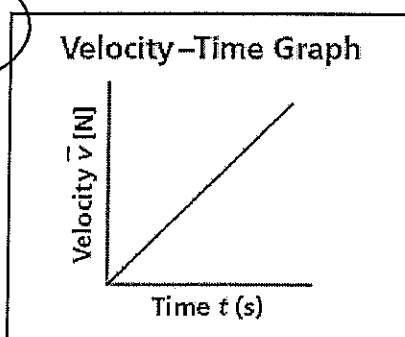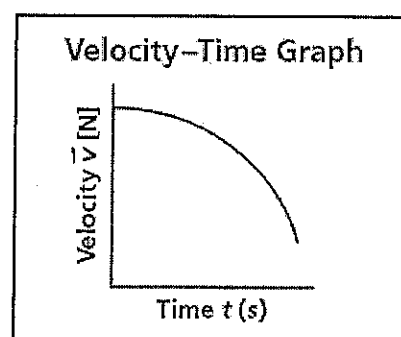
19. Which of the following is a scalar quantity?
A. distance
B. velocity
C. acceleration
D. displacement

20.
What is the work done in lifting a bag of potatoes 1.24 m above the ground with an upward force 88.7 N?

A. 1.40×10^{-2} J
B. 7.15×10^{1} J
C. 1.10×10^{2} J
D. 2.20×10^{2} J

21. Suppose there is no unbalanced force acting on a moving object. How will the object's motion continue?
A. The speed of the object will decrease.
B. The speed of the object will increase.
C. The speed of the object will remain the same.
D. The direction of the object's velocity will change.

22.
An elevator does 9.75×10^{4} J of work on a person riding up to another floor. How much energy does the person gain?

A. 0 J
B. 9.94×10^{3} J
C. 9.75×10^{4} J
D. 9.56×10^{5} J

23. Complete the following statements by filling in the blanks.
a. A(n) _____Force_____ is a push or a pull on an object.
b. The application of a force through a distance is called ___Work___.

24. A car on a hilltop, a fresh battery, a stretched elastic band, and a tank of gasoline each have energy. What kind of energy do they **all** have in common?
A. kinetic energy
B. potential energy
C. elastic potential energy
D. chemical potential energy

25. Match each type of energy with the description that BEST suits it. Place your answer in the blank space given.
i. energy due to an object's motion and position
ii. energy of motion
iii. energy due to an object's position above Earth's surface
iv. energy due to fusion of hydrogen nuclei on the Sun
v. potential energy stored in the chemical bonds of compounds
vi. potential energy stored in the nuclei of atoms

iii a. gravitational potential energy
_ii_ b. kinetic energy
_vi_ c. nuclear energy
_iv_ d. solar energy

26. Pemican is a concentrated food traditionally used by First Nations peoples. What specific kind of potential energy does pemican have that makes it a source of dietary calories?
A. kinetic energy
B. elastic potential energy
C. chemical potential energy
D. gravitational potential energy

27. A moving body has energy due to its motion. This energy is called
A. kinetic energy
B. dynamic energy
C. physical energy
D. potential energy

28. In the formula $Ek = 1/2\ mv^2$, the left side of the equation is in joules. Based on the expression on the right side of the equation, $Ek = 1/2mv^2$, which of the following correctly shows the joule derived from the fundamental units kg, m, and s?
A. m_2/s_2
B. $kg \bullet m/s$
C. $kg_2 \bullet m/s_2$
D. $kg \bullet m_2/s_2$

Use the following information to answer the next four (4) questions!

A spring is used to launch a ball with a mass of 1.00×10^{-2} kg. The spring is compressed 10.0 cm using an average force of 35.0 N. For a launch, the ball is placed against the movable end of the spring and the compressed spring is released.

30.
What is the work done in compressing the spring?
A. 0.350 J
B. 3.50 J
C. 35.0 J
D. 350 J

31. Suppose the spring launches the ball sideways along a track. When the spring is released, what is the kinetic energy of the ball the moment it leaves the end of the spring?
A. 1.23 J
B. 1.75 J
C. 2.49 J
D. 3.50 J

32. What is the speed of the ball the moment it leaves the end of the spring?
A. 13.3 m/s
B. 26.5 m/s
C. 85.7 m/s
D. 700 m/s
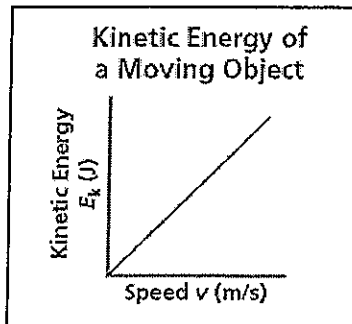
33. Suppose the ball is launched straight up into the air. How high will the ball go?
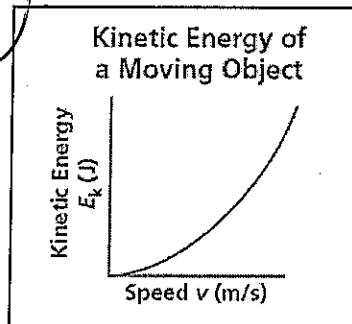A. 0.100 m
B. 10.1 m
C. 17.8 m
D. 35.7 m

34.

The relationship between the kinetic energy of a moving object and its speed can be represented by a graph. Which graph correctly shows this relationship?
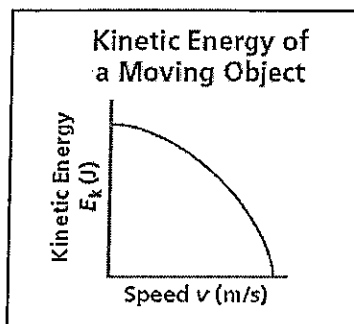
A.
Kinetic Energy of a Moving Object

Kinetic Energy E_k (J)

Speed v (m/s)

B.
Kinetic Energy of a Moving Object

Kinetic Energy E_k (J)

Speed v (m/s)

C.
Kinetic Energy of a Moving Object

Kinetic Energy E_k (J)

Speed v (m/s)

D.
Kinetic Energy of a Moving Object

Kinetic Energy E_k (J)

Speed v (m/s)
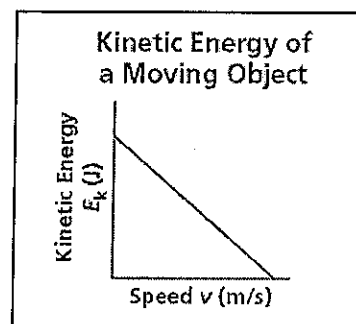
35.

Suppose some objects of different mass travel at the same constant speed. The relationship between their kinetic energy and their mass can be represented by a graph. Which of the following graphs correctly shows the relationship between kinetic energy and mass?
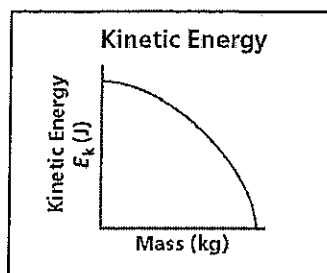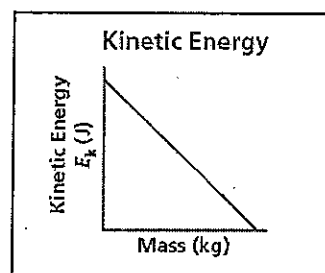
A.
Kinetic Energy

Kinetic Energy E_k (J)

Mass (kg)

B.
Kinetic Energy

Kinetic Energy E_k (J)

Mass (kg)

C.
Kinetic Energy

Kinetic Energy E_k (J)

Mass (kg)

D.
Kinetic Energy

Kinetic Energy E_k (J)

Mass (kg)
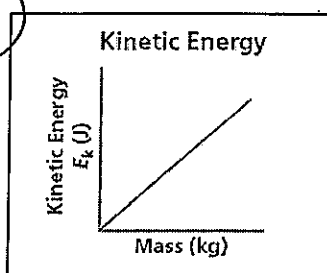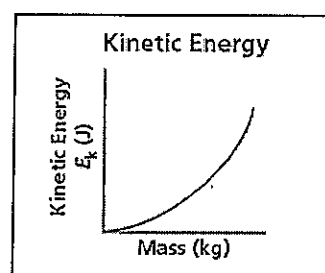
36. Match each description with one of the following terms.
    i. combustion   ii. photosynthesis   iii. respiration
a. a reaction in which light energy, carbon dioxide, and water yield carbohydrates and oxygen   ii
b. a reaction in which flammable hydrocarbons combine with oxygen to yield thermal energy, carbon dioxide, and water   i
c. a reaction in which carbohydrates and oxygen yield energy, carbon dioxide, and water
   iii

37. Which BEST expresses the first law of thermodynamics?
A. The total energy, including thermal energy, in a system and its surroundings remains constant over time.
B. The total amount of kinetic energy and gravitational energy of a system and its surroundings remains constant.
C. An object in motion tends to stay in motion with the same velocity unless acted upon by an unbalanced force.
D. The total amount of mechanical energy of a system and its surroundings remains constant.

38. Which statement represents the second law of thermodynamics?
A. Thermal energy always flows naturally from a cold object to a hot object and never naturally from a hot object to a cold object.
B. There are some processes that can remove thermal energy from a source and convert it entirely into mechanical energy.
C. Some mechanical processes can have an efficiency of 100% with no loss of thermal energy.
D. Work is needed to make thermal energy move from a cold substance to hot substance.

39. Technological devices are designed to convert one form of energy into another form of energy to complete a certain task. The energy that can complete the task is called
A. excess energy
B. useful energy
C. waste energy
D. input energy

40. Technological devices are designed to convert one form of energy into another form of energy to complete a task. The converted energy not used to complete the intended task is called
A. mechanical energy
B. useful energy
C. waste energy
D. input energy

41. The efficiency of a device is the
A. difference between the useful work output and the total input energy
B. ratio of the useful work output to the total input energy
C. ratio of the total input energy to the useful work output
D. sum of the waste energy and the useful work output

42. A hoist lifts a car with a total energy input of 6.73×10^4 J. The car gains 2.35×10^4 J of gravitational potential energy during the process. What is the efficiency of the hoist?
A. 7.00%
B. 17.5%
C. 25.0%
D. 34.9%

43.
An internal combustion engine has an efficiency of 20.0%. This engine is used to deliver 6.00×10^4 J of work to the rest of the drive train. What is the total energy input of the engine?

A. 1.20×10^3 J
B. 4.80×10^3 J
C. 7.20×10^4 J
D. 3.00×10^5 J

44. Globally, which energy resource provides the most energy each year?
A. conventional oil
B. hydro-electric power
C. wind power
D. coal

Science 10 Review Assignment

UNIT A CHEMISTRY

Name: _____

Read each question carefully. Circle the BEST answer and fill in the blanks.

1. Standard eyeglasses are not enough protection in the science lab because

    A.   the lens may break
    (B.) there is no protection from the sides
    C.   a standard eyeglass lens is not thick enough
    D.   standard eyeglasses may fall off

2. Match each meaning with the appropriate WHMIS symbol.

    a.   materials causing other toxic effects *vii*
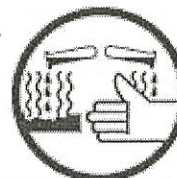
    b.   flammable and combustible material *vi*

    c.   corrosive material *ii*

    d.   materials causing immediate and serious toxic effects *viii*

    e.   compressed gas *iii*

    f.   biohazardous infectious material *i*

    g.   dangerously reactive material *iv*

    h.   oxidizing material *v*

i.   ii.   iii.   iv.   v.   vi.   vii.   viii.

3. Match each description with the appropriate safety hazard symbol.

i.

ii.

iii.

iv.

v.

vi.
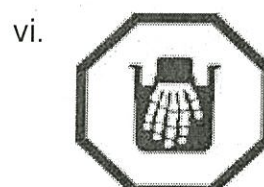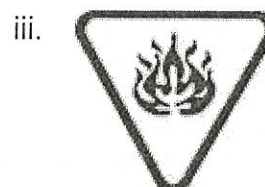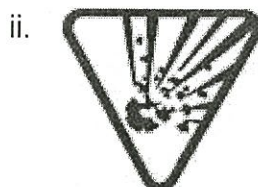
a. The contents are flammable. iii or v

b. The contents are corrosive. iv or vi

c. The container may explode. ii

d. The contents are poisonous. i

4. Match each location with the hazardous substance from the following list you would most likely find in that location.

    i.   oven cleaner   ii.   pesticide
    iii. toilet bowl cleaner   iv. paint thinner

a. garage
    iv

b. garden shed
    ii

c. bathroom
    iii

d. kitchen i

5. Sodium metal reacts vigorously with water. This is an example of a

A. physical property
B. chemical property
C. nuclear reaction
D. physical reaction

6. Which is an example of a physical property?

   A. solubility
   B. ability to burn
   C. behaviour in air
   D. reaction with acids

7. Which indicates that a reaction has occurred after one substance has been added to another?

   A. Bubbles appear.
   B. The solution turns cloudy.
   C. The container becomes warmer.
   D. all of the above

8. A chocolate chip cookie is an example of a(n)

   A. element
   B. atom
   C. mechanical mixture
   D. homogeneous mixture

9. Gold and helium are examples of
   elements, pure substances.

10. Water is an example of a(n) __molecular__ compound.

11. A substance freezes at -58°C. Therefore, the substance melts at __-58°C__.

12. A model of the atom with electrons moving around a positively charged nucleus was first proposed by

   A. J.J. Thomson
   B. Ernest Rutherford
   C. John Dalton
   D. Neils Bohr

13. In the modern quantum mechanical theory of the atom, electron movement is thought to be a

    A.   particle moving around a positively charged nucleus
    B.   "cloud" of negative charge in the centre
    C.   negatively charged particle at a certain energy level
    D.   "cloud" of negative charge occupying the space at a certain energy level

14. Which is not a property of a metal?

    A.   can be beaten or rolled into sheets without crumbling
    B.   can be stretched into long thin wire
    C.   a good conductor of electricity and heat
    D.   a gas at normal temperature and pressure

15. Fluorine, chlorine, and iodine are examples of

    A.   metals
    B.   non-metals
    C.   metalloids
    D.   compounds

16. Lithium, sodium, and potassium are part of a group of elements called

    A.   alkali metals
    B.   noble gases
    C.   halogens
    D.   alkaline-earth metals

17. Which subatomic particle takes up most of the space of an atom?

    A.   proton
    B.   electron
    C.   neutron
    D.   nucleus

Use the Following diagram to answer the next three questions.

18. What is the atomic number of the element?

   A. 11
   B. 12
   C. 22
   D. 23

19. What is the mass number of the element?

   A. 11
   B. 12
   C. 22
   D. 23

20. Which element is it?

   A. oxygen
   B. sodium
   C. vanadium
   D. magnesium

21. Decide whether each statement is true (T) or false (F).

T a. An electron cannot fall into the nucleus under normal circumstances.

T b. An electron in the outer energy level is called a valence electron.

F c. Elements in the same period have the same number of valence electrons.

F d. Positively charged ions are called anions.

T e. An isotope of an element has a different number of neutrons in its nucleus.

22. Complete the following table. Use the periodic table in your databook

Element Name	Mass Number	Number of Protons	Number of Neutrons
beryllium	9	4	5
nitrogen	15	7	8
manganese	55	25	30

23. Complete the following table. Use the periodic table in your databook

Atom or Ion Name	Symbol	Number of Protons	Number of Electrons	Charge	Number of Electrons Lost or Gained
magnesium	Mg^{2+}	12	10	2+	lost 2
lithium	Li^+	3	2	1+	lost 1
sulfur	S^{2-}	16	18	2-	gain 2
zinc	Zn^{2+}	30	28	2+	lost 2

24. Which type of bond is formed when one atom transfers an electron to another atom?

A. ionic bond
B. covalent bond
C. polyatomic bond
D. multivalent bond

25. A charged particle made up of several non-metallic atoms joined together is a(n)

A. covalent ion
B. polyatomic ion
C. multivalent ion
D. electron ion

26. The formula for ammonium sulfate is

    A. $NH_4(SO_4)_2(s)$
    B. $NHSO_4(s)$
    C. $(NH)_2SO_2(s)$
    D. $(NH_4)_2SO_4(s)$

27. What is the name of the compound $FeI_3(s)$?

    A. iron iodide
    B. iron(II) iodide
    C. iron(III) iodide
    D. iron iodide(III)

28. The symbol of the lead(IV) ion is

    A. Pb_4
    B. Pb^{2+}
    C. Pb^{4-}
    D. Pb^{4+}

29. The name of the ion with the formula HCO_3^- is

    A.   carbonate ion
    B.   hydrogen bicarbonate ion
    C.   hydrogencarbonate ion
    D.   hydrocarbon oxide

30. The name of the molecular compound $SCl_2(l)$ is

    A. silver(II) chloride
    B. sulfur dichloride
    C. selenium chloride
    D. silver dichloride

31. The compound $Fe(NO_3)_3(s)$ is classified as a(n)

    A. polyatomic compound
    B. molecular compound
    C. ionic compound
    D. multi-atomic compound

32. Which compound dissolves in water but does not conduct electricity?

    A. table sugar
    B. sodium chloride
    C. sodium hydroxide
    D. hydrochloric acid

33. Which is an example of an ionic compound?

    A. H_2O
    B. CH_4
    C. H_2S
    D. $(NH_4)_2S$

34. Which is a property of an ionic compound?

    A. It is malleable.
    B. It is not soluble in water.
    C. It is a good conductor when it is in a solution.
    D. Its melting or freezing point is below 250°C for most ionic compounds.

35. A substance that dissolves well in water is indicated by its chemical formula followed by

    A. (s)
    B. (aq)
    C. (l)
    D. (g)

36. A solid with low solubility that sometimes forms when ionic solutions are mixed is a

    A.   solute
    B.   solvent
    C.   precipitate
    D.   molecular compound

37. Which is a property of a molecular compound?

    A.   It is malleable.
    B.   It is soluble in water.
    C.   It is a good conductor when it is in a solution.
    D.   Its melting or freezing point is below 250°C.

38. Determine the solubility of the following ionic compounds when added to water by inserting *(aq)* or *(s)* at the end of the formula.

    a. $Sr(OH)_2$ *(aq)*

    b. $Au(NO_3)_3$ *(aq)*

    c. $CuCl$ *(s)*

39. In a solution, red litmus remains red and blue litmus turns red. Therefore, the solution is

    A.   acidic
    B.   basic
    C.   neutral
    D.   both acidic and basic

40. A solution with a pH of 10 that turns red litmus blue is

    A.   acidic
    B.   basic
    C.   neutral
    D.   both acidic and basic

41. When acids and bases react together to a point of neutralization, how are the acidic and basic properties affected?

    A.   The properties remain the same.
    B.   The acidic properties are enhanced.
    C.   The basic properties are enhanced.
    D.   The acidic and basic properties disappear.

42. $Al(OH)_3(s)$ is a base because it __contains hydroxide (OH)__
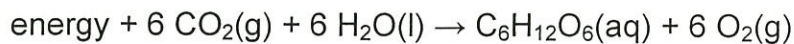
43. The symbol used to indicate that a substance is a solid is

    A. (aq)
    B. (g)
    C. (l)
    D. (s)

44. The reaction for the combustion of methane is

    A.   exothermic and absorbs energy
    B.   exothermic and releases energy
    C.   endothermic and absorbs energy
    D.   endothermic and releases energy

45. The equation for photosynthesis is as follows:

$$energy + 6\ CO_2(g) + 6\ H_2O(l) \rightarrow C_6H_{12}O_6(aq) + 6\ O_2(g)$$

This reaction is
    A.   exothermic and absorbs energy
    B.   exothermic and releases energy
    C.   endothermic and absorbs energy
    D.   endothermic and releases energy

46. The total number of atoms before a reaction is equal to the total number of atoms after a reaction. This illustrates

    A.   that atoms are all the same size
    B.   the law of chemical reaction
    C.   the law of conservation of mass
    D.   that no new substance is produced in a chemical reaction

47. $C_xH_y + O_2(g) \rightarrow CO_2(g) + H_2O(g)$ is the general form of a

    A. formation reaction
    B. synthesis reaction
    C. decomposition reaction
    D. hydrocarbon combustion reaction

48. Calcium carbonate reacts with sulfur dioxide gas and oxygen gas to produce solid calcium sulfate and carbon dioxide gas. The correct unbalanced equation for this reaction is

    A. $CaCO(s) + SO(g) + O(g) \rightarrow CaSO(s) + CO(g)$
    B. $CaCO_2(s) + SO_2(g) + O_3(g) \rightarrow CaSO_2(s) + CO_2(g)$
    C. $CaCO_3(s) + SO_2(g) + O_2(g) \rightarrow CaSO_4(s) + CO_2(g)$
    D. $Ca(CO_3)_2(s) + SO_2(g) + O_2(g) \rightarrow Ca_2SO_4(s) + CO_2(g)$

49. A chemical reaction in which a compound and an element react to form a new compound is a

    A. formation reaction
    B. decomposition reaction
    C. single replacement reaction
    D. double replacement reaction

50. A chemical reaction in which a compound is broken down into its elements is a

    A. formation reaction
    B. decomposition reaction
    C. single replacement reaction
    D. double replacement reaction

51. Which is the correct unbalanced equation for
water + sodium → sodium hydroxide + hydrogen?

    A. $NaOH(aq) \rightarrow H_2O(l) + H_2(g)$
    B. $H_2O(l) + Na(s) \rightarrow NaOH(aq) + H_2(g)$
    C. $H_2O(l) + Na(s) \rightarrow Na_2OH(aq) + H_2(g)$
    D. $HO(g) + Na(s) \rightarrow NaOH(aq) + H(g)$

52. Which is the correct balanced equation for
copper(II) sulfate + aluminium → aluminium sulfate + solid copper?

    A. $CuSO_4(aq) + Al(s) \rightarrow Al_2(SO_4)_3(aq) + Cu(s)$
    B. $3\ CuSO_4(aq) + 2\ Al(s) \rightarrow Al_2(SO_4)_3(aq) + Cu(s)$
    C. $3\ CuSO_4(aq) + 2\ Al(s) \rightarrow Al_2(SO_4)_3(aq) + 3\ Cu(s)$
    D. $3\ CuSO_4(aq) + Al(s) \rightarrow Al_2(SO_4)_3(aq) + 3\ Cu(s)$

53. $NI_3(s) \rightarrow N_2(g) + I_2(s)$ is an example of a

    A. formation reaction
    B. decomposition reaction
    C. single replacement reaction
    D. hydrocarbon combustion reaction

54. Classify the following reactions.

    a. $C_3H_8 + O_2(g) \rightarrow CO_2(g) + H_2O(g)$ *hydrocarbon combustion*

    b. $Cs(s) + S_8(s) \rightarrow Cs_2S(s)$ *Formation /Synthesis*

    c. nickel(III) nitrate + calcium → calcium nitrate + nickel   *single replacement*

55. Which element was chosen as the standard for defining a mole?

    A. iron
    B. carbon
    C. hydrogen
    D. oxygen

56. How many grams is in one mole of CO_2?

    A. 12.01 g
    B. 16.00 g
    C. 28.01 g
    D. 44.01 g

57. How many moles are present in 500.0 g of H_2O?

    A. 9010
    B. 247.5
    C. 31.25
    D. 27.75

58. The mass of 4.50 mol of calcium carbonate is

    A. 450 g
    B. 306 g
    C. 100 g
    D. 4.50 g

59. Atomic molar mass is defined as

    A. the mass of one atom
    B. Avogadro's number of atoms
    C. the mass of one mole of an element
    D. the average mass of one mole of an element

60. When calculating the number of moles of $Na_2SO_4(s)$, the factor used is

    A. $\dfrac{1 \text{ mol}}{119.06 \text{ g}}$

    B. $\dfrac{1 \text{ mol}}{142.05 \text{ g}}$

    C. $\dfrac{119.06 \text{ g}}{1 \text{ mol}}$

    D. $\dfrac{142.05 \text{ g}}{1 \text{ mol}}$

61. There are ____6.02×10^{23}____ particles in one mole.