

PHYSICAL SCIENCE (1)

1) Which refers to the recorded observations and measurements in an experiment?

- a. Conclusion
- b. Data
- c. Graph
- d. Variables

2) How is hypothesis tested?

- a. by gathering enough information about the problem
- b. by making inferences
- c. by conducting experiment
- d. by formulating conclusion

3) Which summarizes a natural occurrence that may be constantly observed given the same conditions which may be expressed in words or in mathematical form?

- a. Conclusion
- b. Hypothesis
- c. Law
- d. Theory

4) Mark prepares a solution by putting a pinch of orange crystals to water in a beaker, then by consistent stirring, the crystals dissolve. Which of the statements above are likely to be observed by Mark?

- I. The water becomes orange.
 - II. The color of the solution becomes darker.
 - III. Crystals disappear from the bottom of the beaker.
 - IV. The beaker and its contents become heavier as stirring continues.
- a. I and II
 - b. III and IV
 - c. I, II and III
 - d. I, II and IV

5) Which of the following is NOT true about scientific method?

- a. Conclusion is the last step.
- b. Scientific method may be applied in everyday life.
- c. Scientific method is a systematic way of solving problem.
- d. Scientific method is done by following a step-by-step procedure in a exact sequence.

6) Which apparatus will you use to measure the mass of an irregular solid correctly?

- a. Empty beaker
- b. Erlenmeyer flask
- c. Graduated cylinder with water
- d. Vernier caliper

7) To graph the distance covered and velocity of a car, which is the dependent variable? Where should be it plotted on a line graph?

- a. Distance, x-axis
- b. Distance, y-axis
- c. Velocity, x-axis
- d. Velocity, y-axis

8) A student found a piece of metal. What can the student do to quickly determine if the metal might contain iron?

- a. heat the metal
- b. weigh the metal
- c. place the metal in water
- d. place the metal near a magnet

9) A student dipped a strip of aluminum and a strip of iron in water. The student then exposed the strips to air for one week. Which was most likely happen one week later?

- a. The iron strip formed rust.
- b. The aluminum strip formed rust.
- c. Both of the metal strips formed rust.
- d. Neither of the metal strips formed rust.

10) Aubrey wants to track her summative tests scores over the course of grading period. Which of the following will BEST allow her to analyze her progress?

- a. Bar graph
- b. Line graph
- c. Pie graph
- d. Scatter graph

11) What will most likely occur if global warming will not be addressed?

- a. Lower sea levels
- b. Melting of ice caps
- c. More pollution in water
- d. More reflected sunlight off the ice pack

12) How is the relationship described when both quantities are increasing but one quantity increases faster than the other?

- a. Direct proportion
- b. Direct square proportion
- c. Inverse proportion
- d. Inverse square proportion

13) In your attempt to determine which is denser - oil or water, you mixed 25mL of oil with 25mL of water. What helpful qualitative data can you derive from this setup?

- a. There are 50mL of liquid in the container.
- b. Oil did not mix with water.
- c. Oil is on top of the water.
- d. There are 25mL of water and 25mL of oil in the container.

14) Which of the following is a compound?

- a. Cemented wall
- b. Dry ice
- c. Gold
- d. Tincture of iodine

15) Which is most likely to change blue litmus paper to red?

- a. Ammonia in water
- b. Detergent solution
- c. Limewater
- d. Vinegar

16) Which can be classified as homogeneous mixture?

- I. Buko pie
 - II. Blood
 - III. Virgin coconut oil
 - IV. Mango juice
- a. III only
 - b. I and II
 - c. I, II and IV
 - d. II, III and IV

17) Which of the following is a physical property of non-metals?

- a. Malleability and ductility
- b. Low tensile strength
- c. High density
- d. High tensile strength

18) The yellow color of a highlighter is a _____ property.

- a. chemical
- b. heterogeneous
- c. homogeneous
- d. physical

19) An odorless and colorless matter boils at 100 degree Celsius and melts at 0 degree Celsius. What inference can be drawn from this observation?

- a. It is a metal
- b. It is a mixture
- c. It is a non-metal
- d. It is a pure substance

20) You want to clean a tarnished silver. Which one will you use?

- a. Baking soda
- b. Salt solution
- c. Sugar solution
- d. Vinegar

21) What will you add to your food to make it last longer?

- a. Baking soda
- b. Salt solution
- c. Tomato
- d. Vinegar

22) Why is not advisable to drink softdrinks on an empty stomach?

- a. It could lessen your appetite.
- b. It could make you feel full faster.
- c. It increases the acidity of your stomach.
- d. It contains stimulant which causes dizziness.

23) Almost the entire mass of an atom is concentrated in the _____.

- a. electron
- b. neutron
- c. nucleus
- d. proton

24) How many protons are present if an atom has a mass number of 23 and atomic number of 11?

- a. 11
- b. 12
- c. 23
- d. 44

25) Carbon-12 atom has _____.

- a. 6 electrons, 6 protons, 6 neutrons
- b. 6 electrons, 12 protons, 6 neutrons
- c. 12 electrons, 6 protons, 6 neutrons
- d. 16 electrons, 6 protons, 6 neutrons

26) What happens to atomic number during a chemical reaction?

- a. changes
- b. remains the same
- c. changes alternately
- d. changes and then is restored

27) Which of the following statements about isotopes of hydrogen is correct?

- a. They have different atomic numbers.
- b. They have the same number of neutrons.
- c. They have the same number of protons.
- d. They have different number of electrons.

28) What happens when a metal reacts with a non-metal? Usually _____.

- a. a simple covalent bond is formed
- b. a coordinate covalent bond is formed
- c. positive and negative ions are formed
- d. there is a sharing of electrons in the outer shells of two elements

29) What bond exists in a solid that does not conduct electricity but conduct electricity when dissolved in water?

- a. Coordinate covalent bond
- b. Covalent bond
- c. Ionic bond
- d. Metallic bond

30) N, Y, and Z represent elements of atomic numbers 9, 11, and 16. What type of bond will be formed between Y and Z?

- a. Ionic bond
- b. Metallic bond
- c. Nonpolar covalent bond
- d. Polar covalent bond

31) A weak attraction between hydrogen atom in one molecule and an oxygen in another is called _____.

- a. Covalent bond
- b. Hydrogen bond
- c. Ionic bond
- d. Metallic bond

32) What is the element needed to bond with Na to create the most ionic bond?

- a. F
- b. Cl
- c. Br
- d. I

33) The boiling point of substance A is higher than that of substance B. What does this mean?

- a. Substance A is less viscous than substance B.
- b. Substance A evaporates faster than substance B.
- c. Substance B has greater surface tension than substance A.
- d. Substance B has weaker intermolecular forces than substance A.

34) What is the intermolecular force of attraction between the nucleus of one atom and the electrons of a nearby atom?

- a. Dipole-dipole force
- b. Ion-dipole force

c. London dispersion force

d. Van der Waals force

35) In oxidation-reduction, the oxidizing agent is reduced and gains electrons. The reducing agent is oxidized and loses electrons. Are the statements CORRECT?

- a. Both statements are correct
- b. Both statements are false
- c. First statement is true; second statement is false
- d. Second statement is true; first statement is false

36) How many moles of iron does 25g of Fe represent? (Fe=55.85g)

- a. 0.448 mol
- b. 2.234 mol
- c. 30.85 mol
- d. 80.85 mol

37) Which of the following is NOT a principal assumption of Kinetic Molecular Theory?

- a. Gas particles move rapidly.
- b. Gases consist of submicroscopic particles.
- c. There is very little empty space in a gas.
- d. Gas particles have no attraction for one another.

38) Which refers to the kinetic energy or motion of gas particles?

- a. Pressure
- b. Quantity of gas
- c. Temperature
- d. Volume

39) What is the BEST reason why the atmospheric pressure in Baguio City is lower than the atmospheric pressure at sea level?

- a. Because there are more gas particles at higher altitudes.
- b. Because there are less gas particles at higher altitudes.
- c. Because there is greater temperature at higher altitudes.
- d. Because there is lesser temperature at higher altitudes.

40) Which of the following correctly describes the process of exhalation (air going out of the lungs)?

- a. The lungs decrease in volume, causing the internal pressure to increase.
- b. The lungs decrease in volume, causing the internal pressure to decrease.
- c. The lungs increase in volume, causing the internal pressure to increase.
- d. The lungs increase in volume, causing the internal pressure to decrease.

41) How is food cooked faster using a pressure cooker?

- a. The accumulated steam increases the pressure and decreases the boiling point of the liquid.
- b. The accumulated steam increases the pressure and increases the boiling point of the liquid.
- c. The accumulated steam decreases the pressure and decreases the boiling point of the liquid.
- d. The accumulated steam decreases the pressure and increases the boiling point of the liquid.

42) Which of the following is NOT a characteristic of a base?

- a. Bitter taste
- b. Slippery feeling
- c. Able to change litmus from red to blue
- d. Reacts with carbonates to produce carbon dioxide

43) Which factor affects the rate of dissolution when powdered sugar dissolves more rapidly than granulated sugar?

- a. Application of heat
- b. Nature of solute
- c. Particle size
- d. Stirring

44) In which factor is the description "like dissolves like" BEST used?

- a. Volume
- b. Pressure
- c. Temperature
- d. Nature of solute and solvent

45) When the production of hydrogen ions in the body is the same as their loss, you are in _____.

- a. acid-base balance
- b. electrolytic balance
- c. water balance

d. balanced diet

46) When an egg yolk is added to oil and water with vinegar to make mayonnaise, the egg yolk serves as _____.

- a. coagulant
- b. emulsifying agent
- c. solvent
- d. surfactant

47) Which of the following involves adsorption?

- a. Plating of copper on a steel object
- b. Adherence of paint to wood surfaces
- c. Brown color of the eyes of Filipinos
- d. Removal of odor inside a refrigerator using charcoal

48) Which of the following BEST describes temperature?

- a. Temperature measures the total energy in something.
- b. Temperature measures the kinetics energy in substance.
- c. Temperature measures the total kinetic energy contained in an object.
- d. Temperature measures the average molecular kinetic energy in a substance.

49) The Earth receives tremendous heat coming from the sun which could be beneficial at one point and harmful to a large extent. Which of the following methods of transferring heat is being illustrated?

- a. Conduction
- b. Convection
- c. Radiation
- d. Transduction

50) A reaction takes place endothermically. Which of the following statements BEST describes endothermic reactions?

- a. The temperature of the system drops.
- b. The temperature of the surrounding rises.
- c. The temperature of the surrounding drops.
- d. The temperature of the surrounding remains the same.

PHYSICAL SCIENCE (2)

1) Which of the following statements on specific heat is TRUE?

- a. It is an extrinsic property.
- b. It is always equal to the heat capacity.
- c. It is the heat capacity per mole of a substance.
- d. It is equal to zero when the heat capacity is zero.

2) The entropy usually increases when _____.

- I. A molecule is broken into two or more smaller molecules
- II. A reaction occurs that results in an increase in the number of moles of gas
- III. A solid changes to a liquid
- IV. A liquid changes to a gas
- a. I and II
- b. III and IV
- c. I, II and III
- d. I, II, III and IV

3) Change in enthalpy for combustion of fuel is _____.

- a. negative
- b. positive
- c. zero
- d. may be negative or positive

4) Which situation appears to violate the collision theory?

- a. The reaction rate increases as temperature increases.
- b. The reaction rate decreases as the reaction mixture is cooled.
- c. The reaction rate increases as the surface area of the reactants increases.
- d. A reaction rate takes more time when the concentration of a reactant is decreased.

5) Which statement is TRUE about catalysts?

- a. They increase the rate of reaction by increasing the activation energy.
- b. They provide alternative reaction paths with lower activation energies.
- c. The amount of catalyst decreases as the reaction progresses.
- d. They are used up in the reaction.

6) Milk turns sour in one or two days when left at room temperature and yet can remain unspoiled for two weeks refrigerated. What explains this?

- a. Decrease in temperature speeds up reaction rate.
- b. Decrease in temperature slows down reaction rate.
- c. Milk becomes less concentrated when placed in refrigerator.
- d. Milk becomes more concentrated when placed in refrigerator.

7) What factor affects sawdust to burn faster than a block of wood?

- a. Concentration of reactant
- b. Presence of catalyst
- c. Surface area of reactant
- d. Temperature

8) Which of the following observations is NOT true whenever a system is in chemical equilibrium?

- a. Attainment of equilibrium requires time.
- b. The rates of opposing reactions are equal.
- c. The products do not change back to reactants.
- d. Concentrations remain constant at equilibrium even though the opposing reactions are continuing.

9) Which of the following is also known as paraffin or saturated hydrocarbon?

- a. Alkane
- b. Alkene
- c. Alkyne
- d. Cycloalkane

10) Which of the following are properties of organic compounds?

- I. High melting point
- II. Low boiling point
- III. High solubility in water
- IV. Non conductor of electricity
- a. I and II
- b. I and III
- c. II and III
- d. II and IV

11) Which of the following is an organic compound?

- a. Baking soda
- b. Glucose
- c. Limestone
- d. Sulfuric acid

12) Which of the following serves as thermal insulator in the body?

- a. Carbohydrates
- b. Fats
- c. Nucleic acids
- d. Proteins

13) In DNA, which is the correct complementary pairing of the nitrogenous bases?

- a. AG and CT
- b. AA and GG
- c. AC and GC
- d. AT and GC

14) Which biomolecule is considered the building blocks of tissues and organs?

- a. Carbohydrates
- b. Lipid
- c. Nucleic acid
- d. Protein

15) What is the main function of the hormone oxytocin in the body?

- a. Controls water secretion by the kidneys.
- b. Stimulates conversion of glycogen to glucose.
- c. Controls blood - glucose level and storage of glycogen.
- d. Stimulates contraction of the uterine muscles and secretion of milk by the mammary glands.

16) The half-life of thorium-234 is 24 days. How much 5g of ^{234}Th would be left after 48 days?

- a. 0.625g
- b. 1.25g
- c. 2.50g
- d. 3.75g

17) What happens when there is a loss of an alpha particle from the nucleus?

- a. No change in the mass number or atomic number

- b. Loss of 4 in the mass number, loss of 2 in the atomic number
- c. Loss of 2 in the mass number, loss of 4 in the atomic number
- d. No change in the mass number, increase of 1 in the atomic number

18) Which of the following poses a serious obstacle to the development of commercial fusion power plants?

- a. Scarcity of deuterium
- b. Public concern about safety
- c. Dwindling supply of uranium
- d. Exceedingly high activation energy

19) A radioisotope is considered a tracer when it is used to _____.

- a. kill cancerous tissues
- b. kill bacteria in food
- c. determine the age of artifacts
- d. determine the way plants absorb fertilizers

20) Identify the following quantities as scalar or vector respectively: mass of an object, the number of leaves on a tree, and wind velocity.

- a. Scalar, Scalar, Vector
- b. Scalar, Vector, Vector
- c. Vector, Scalar, Scalar
- d. Vector, Scalar, Vector

21) Which of the following is a scalar quantity?

- a. Acceleration
- b. Temperature
- c. Velocity
- d. Weight

22) Which of the following describes a vector quantity?

- a. It specifies direction only.
- b. It specifies magnitude only.
- c. It can be a dimensionless quantity.
- d. It specifies both magnitude and direction.

23) A man pushes against the wall with 25 pounds of force. The wall does not move. What is the resultant force?

- a. -25 pounds
- b. 0 pounds
- c. 50 pounds
- d. 75 pounds

24) In a coordinate system, a vector is oriented at angle with respect to the x axis. The component of the vector equals the vector's magnitude multiplied by which trigonometric function?

- a. Cos angle
- b. Cot angle
- c. Sin angle
- d. Tan angle

25) An ant on a picnic table travels 30cm due east, then 25cm northward and finally 15cm west. What is the magnitude of the ant's displacement relative to its point of origin?

- a. 29cm
- b. 58cm
- c. 70cm
- d. 99cm

26) What will happen to a moving object if the sum of all forces acting on it is zero?

- a. It will accelerate uniformly.
- b. It will slow down and stop.
- c. It will change the direction of its motion.
- d. It will continue moving with constant velocity.

27) Acceleration is always in the direction of the _____.

- a. displacement
- b. final velocity
- c. initial velocity
- d. net force

28) A brick slides on a horizontal surface. Which of the following will increase in magnitude of the frictional force on it?

- a. Putting a second brick on top.
- b. Decreasing the mass of the brick.
- c. Increasing the surface area of contact.
- d. Decreasing the surface area of contact.

29) The potential energy of a body at a certain height is 100 J. The kinetic energy possessed by it when it just touches the surface of the earth is _____.

- a. greater than the potential energy
- b. less than the potential energy
- c. equal to the potential energy
- d. cannot be known

30) What happens to the kinetic energy of an object if its speed is doubled?

- a. It will be halved
- b. It will be doubled
- c. It will be tripled
- d. It will be quadrupled

31) What is the type of energy possessed by a simple pendulum when it is at the mean position?

- a. Kinetic energy
- b. Mechanical energy
- c. Potential energy
- d. Sound energy

32) A ball is thrown upward into the air with a speed that is greater than terminal speed. On the way up, it slows down and after its speed equals the terminal speed but before it gets to the trajectory _____.

- a. it speeds up
- b. its speed is constant
- c. it continues to slow down
- d. its motion becomes jerky

33) When a bullet is fired from a rifle, the force on the rifle is equal to the force on the bullet. Why is it that the energy of the bullet is greater than the energy of the recoiling rifle?

- a. Because there is more impulse on the bullet.
- b. Because the force on the bullet acts for a longer time.
- c. Because the force on the bullet acts for a longer distance.
- d. Because the bullet's momentum is greater than that of the rifle.

34) Car A has a mass of 1,000kg and a speed of 60 kph while Car B has a mass of 2,000kg running at a speed of 30 kph. What is the kinetic energy of Car A?

- a. Half that of Car B
- b. Equal that of Car B
- c. Twice that of Car B
- d. Four time that of Car B

35) An object is thrown straight up. Which of the following is TRUE about the sign of work done by the gravitational force while the object moves up and down?

- a. Work is zero on the way up, work is zero on the way down.
- b. Work is negative on the way up, work is negative on the way down.
- c. Work is negative on the way up, work is positive on the way down.
- d. Work is positive on the way up, work is negative on the way down.

36) What happens to the kinetic energy of a moving object if the net work done is positive?

- a. The kinetic energy remains the same.
- b. The kinetic energy increases.
- c. The kinetic energy decreases.
- d. The kinetic energy is zero.

37) Object A with a mass of 4kg is lifted vertically 3m from the ground, object B with a mass of 2kg is lifted 6m up. Which of the following statement/s is/are TRUE?

- I. Object A has greater potential energy since it is heavier.
- II. Object B has greater potential energy since it is lifted to a higher position.
- III. Two objects have the same potential energy.
- a. I only
- b. II only
- c. III only
- d. not enough information given

38) According to the scientific definition of work, pushing a table accomplishes no work unless there is _____.

- a. an opposing force
- b. a net force greater than zero
- c. an applied force greater than its weight
- d. movement in the same direction as the force

39) A machine does 2,500 J of work in 1 minute. What is the power developed by the machine?

- a. 21 W
- b. 42 W
- c. 2,500 W
- d. 150,000 W

40) To which type of simple machine does a pencil sharpener belong?

- a. Inclined plane
- b. Lever
- c. Pulley
- d. Wheel and axle

41) Which of Newton's laws best explains why motorists should always wear belts?

- a. Law of Inertia
- b. Law of Acceleration
- c. Law of Interaction
- d. Law of Gravitation

42) The same net force is applied to object 1 and object 2. The two accelerations of the two objects are not the same. Object 1 has an acceleration three times that of object 2. Which of the following is correct?

- a. Object 1 has more friction than object 2.
- b. Object 1 has one-third the mass of object 2.
- c. Object 1 has three times the mass of object 2.
- d. Object 1 has a different, less streamlined shape than object 2.

43) The law of inertia applies to _____.

- a. moving objects
- b. objects that are not moving
- c. both moving and non-moving objects
- d. none of these

44) Which statement is CORRECT about the Law of Conservation of Energy?

- a. The total amount of energy is constant.
- b. Energy cannot be used faster than it is created.
- c. The supply of energy is limited so we must conserve.
- d. Energy must be conserved and you are breaking a law if you waste energy.

45) Which of the following can transform electrical energy to mechanical energy?

- a. Electric bulb
- b. Electric fan
- c. Loud speaker
- d. Television

46) Daniel is making a picture frame. He sticks a nail into a piece of wood and hits the nail with a hammer. Which form of energy is NOT released when the hammer hits the nail?

- a. Chemical
- b. Kinetic
- c. Sound
- d. Thermal

47) Stephen throws a baseball into the air. It rises, stops when it reaches the greatest height, and then falls back to the ground. At what point is kinetic energy initially converted to potential energy?

- a. When the baseball is rising
- b. When the baseball is falling
- c. Just after the baseball hits the ground
- d. While the baseball is stopped into the air

48) Which energy conversion takes place when a toaster is switched on?

- a. Chemical to sound
- b. Chemical to thermal
- c. Electrical to sound
- d. Electrical to thermal

49) When coal is burned to produce electricity, the electrical energy produced is less than the potential energy of the coal. Which BEST explains this observation?

- a. The amount of energy in the coal is not known.
- b. As the coal is heated, the molecules move so fast that they are destroyed.
- c. Some of the potential energy in the coal is converted into forms of energy other than electricity.

d. Some of the potential energy in the coal requires more intense heat so that it can be compared to electricity.

50) What is TRUE of all combinations of resistors arranged in parallel?

- I. Current splits down each leg of the combination.
- II. Voltage is constant across each leg of the combination.
- III. Resistance is the same for each leg of the combination.
- a. I and II
- b. I and III
- c. II and III
- d. I, II and III

PHYSICAL SCIENCE (3)

1) What is a closed, continuous path through which electrons can flow?

- a. Charge
- b. Circuit
- c. Resistor
- d. Voltage

2) What will be your charge if you scrape electrons from your feet while scuffing across the rug?

- a. Negative
- b. Neutral
- c. Positive
- d. Not enough information given

3) How will your force change if the distance between the two charged spheres is doubled?

- a. The force is doubled
- b. The force is tripled
- c. The force is quadrupled
- d. The force is multiplied eight times

4) A 6 ohm and 12 ohm resistors are connected in parallel with each other to a battery. Which of the following is TRUE?

- a. More current will flow through the 20 ohm resistor.
- b. The current flowing through the resistors is the same.
- c. The resistor values must be equal for the circuit to work.
- d. The potential difference across the two resistors is the same.

5) A new 1.5 V dry cell furnishes 30 A when short circuited. Find the internal resistance of the cell.

- a. 0.05 ohm
- b. 0.10 ohm
- c. 1.5 ohm
- d. 30 ohm

6) If three identical lamps are connected in parallel to a 6 V dry cell, what is the voltage drop across each lamp?

- a. 2 V
- b. 3 V
- c. 6 V
- d. 18 V

7) Which of the following describes an electric current?

- a. Regulates the movement of electric charge.
- b. The opposition a material offers to the electron flow.
- c. The electric pressure that causes charged particles to flow.
- d. The movement of charged particles in a specific direction.

8) A 10 W bulb and a 20 W bulb are connected in a series circuit. Which bulb has the more current flowing in it?

- a. The 10 W bulb
- b. The 20 W bulb
- c. Both bulbs have the same current
- d. Cannot be determined

9) Which of the following are characteristics of a series circuit?

- I. The current that flows through each resistance is the same as the total current throughout the circuit.
- II. The sum of all the individual voltage drops is the same as the applied voltage.
- III. The reciprocal of the total resistance is equal to the sum of the reciprocals of the separate resistances.
- IV. The voltage drop in each resistance is the same as the magnitude of the applied voltage.
- a. I and II

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

10) Which states that the sum of all potential rises and potential drops in any loop (closed circuit) is zero?

- a. Coulomb's Law
- b. Kirchoff's Law
- c. Law of Electrolysis
- d. Ohm's Law

11) A television and an electric fan are connected in parallel top a 220 V line. The current in the television is 8 A and in the electric fan is 3 A. What is the current flowing in the line?

- a. 2.67 A
- b. 5 A
- c. 11 A
- d. 24 A

12) What happens to current if resistance increases?

- a. Decreases
- b. Increases
- c. No change
- d. Cannot be determined

13) Which of the following statements DOES NOT represent Ohm's Law?

- a. current/potential difference = constant
- b. potential difference/current = constant
- c. potential difference = current x resistance
- d. current = resistance x potential difference

14) What is the resistance of an electric bulb drawing 1.2 A current and 6.0 V?

- a. 0.2 ohm
- b. 0.5 ohm
- c. 2 ohm
- d. 5 ohm

15) What happens to the current-carrying ability of a wire as temperature increases?

- a. There is no change.
- b. The wire can't carry any current.
- c. The wire can carry more current.
- d. The wire can carry less current.

16) A 300 W at 220 V TV set is used at an average of 4 hours a day for 30 days. If the electrical energy costs P1.60 per kilowatt-hour, how much is the energy cost?

- a. P5.76
- b. P22.50
- c. P57.60
- d. P225.00

17) Electromagnetic radiation can be used for wireless communications. Which of the following can be used to transmit signals such as mobile phone calls?

- a. Infrared
- b. Gamma
- c. Microwaves
- d. Radiowaves

18) Which statement about the North-magnetic pole of the Earth is TRUE?

- a. Its location never changes.
- b. It corresponds to the N-pole of a bar magnet.
- c. It corresponds to the S-pole of a bar magnet.
- d. It is at the same location as the geographic north pole of the Earth.

19) An iron nail can be turned into a temporary magnet if it is held in a strong magnetic field. Which method of magnetization is this?

- a. Charging
- b. Conduction
- c. Induction
- d. Saturation

20) Which of the following factors affect the size of the induced current in a coil?

- I. Number of turns in the coil
- II. Size of the inducing field
- III. Direction of the windings in the coil

IV. Resistance of the wire in the coil

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

21) To use the right hand rule to predict the direction of an induced current in a coil, your thumb must point _____.

- a. to the direction of the motion of the wire
- b. to the N-pole of the induced magnetic field
- c. in the direction of the induced current
- d. in the direction of the inducing field

22) When a bar magnet is inserted into a coil, a current of 12.0 A is induced into the coil. If four magnets of the same type are inserted into the coil at the same time, what would be the induced current?

- a. 3 A
- b. 4 A
- c. 12 A
- d. 48 A

23) What is the direction of a magnetic field within a magnet?

- a. from north to south
- b. from south to north
- c. from to back
- d. back to front

24) Which is the induced voltage across a stationary conductor in a stationary magnetic field?

- a. decreased
- b. increased
- c. zero
- d. reversed in polarity

25) What is the magnetomotive force (mmf) of a wire with 8 turns carrying 3 A of current?

- a. 2.67
- b. 24
- c. 240
- d. 2,400

26) A coil of wire is placed in a changing magnetic field. If the number of turns in the coil is decreased, what will happen to the voltage induced across the coil?

- a. remain constant
- b. be excessive
- c. decreased
- d. increased

27) Which of the following is TRUE about the frequency and velocity of electromagnetic waves?

- a. Frequency and wavelength are interdependent of each other
- b. As frequency increases, wavelength decreases
- c. As frequency increases, wavelength increases
- d. Frequency is constant for all wavelengths

28) Which of the following correctly lists electromagnetic waves in order from longest to shortest wavelength?

- a. television, infrared, visible light, x-rays
- b. gamma rays, ultraviolet, infrared, microwaves
- c. radiowaves, infrared, gamma rays, ultraviolet
- d. microwaves, ultraviolet, visible light, gamma rays

29) An electromagnetic wave is radiated by a straight wire antenna that is oriented vertically. What should be the orientation of a straight wire receiving antenna?

- a. diagonally
- b. vertically
- c. horizontally and in a direction parallel to the wave's direction of motion
- d. horizontally and in a direction perpendicular to the wave's direction of motion

30) What should a good diode tested with an ohmmeter indicate?

- a. High resistance when forward or reverse biased.
- b. Low resistance when forward or reversed biased.
- c. High resistance when reverse biased and low resistance when forward biased.
- d. High resistance when forward biased and low resistance when forward biased.

31) Vacuum tubes in a radio transmitter are used to _____.

- a. record programs
- b. provide DC supply
- c. generate high power radio waves
- d. provide lighting inside the studio

32) Which material is the usual component of an anode?

- a. Aluminum
- b. Carbon
- c. Copper
- d. Nickel

33) A metal spoon is placed in a cup filled with hot coffee. After some time, the exposed end of the spoon becomes hot even without a direct contact with the liquid. What explains this phenomenon?

- a. Conduction
- b. Convection
- c. Radiation
- d. Thermal expansion

34) Which causes the warmth that you feel when you place your finger at the side of the flame of a burning candle?

- a. Conduction
- b. Convection
- c. Radiation
- d. Not enough information given

35) Which process of heat transfer happens by the movement of mass from one place to another?

- a. Conduction
- b. Convection
- c. Induction
- d. Radiation

36) When work is done by a system, what happens to its temperature assuming that no heat is added to it?

- a. decreases
- b. increases
- c. remains the same
- d. none of these

37) Which states that "when two systems are in thermal equilibrium with a third system, then they are in thermal equilibrium with each other?"

- a. Zeroth Law of Thermodynamics
- b. First Law of Thermodynamics
- c. Second Law of Thermodynamics
- d. Mechanical Equivalent of Heat

38) What happens in an adiabatic process?

- a. No heat enters or leaves the system
- b. The pressure of the system remain constant
- c. The temperature of the system remains constant
- d. The system does no work nor work is done on it.

39) What thermodynamic process is involved in a closed car inside a hot garage?

- a. Adiabatic
- b. Isobaric
- c. Isochoric
- d. Isothermal

40) Consider the thermal energy transfer during a chemical process. When heat is transferred to the system, the process is said to be _____ and the sign of H is _____.

- a. endothermic, positive
- b. endothermic, negative
- c. exothermic, positive
- d. exothermic, negative

41) Which of the following statements is FALSE?

- a. Entropy increases with the number of microstates of the system.
- b. Any irreversible process results in an overall increase in entropy.
- c. The total entropy of the universe increases in any spontaneous process.
- d. The change in entropy in a system depends on the initial and final states of the system and the path taken from one state to the other.

42) During a refrigeration cycle, heat is rejected by the refrigerant in a _____.

- a. compressor
- b. condenser
- c. evaporator
- d. expansion valve

43) Which of the following CORRECTLY describes a refrigeration system?

- a. Rejects energy to a low temperature body.
- b. Rejects energy to a high temperature body.
- c. Removes heat from a low temperature body and delivers it to a high temperature body.
- d. Removes heat from a high temperature body and delivers it to a low temperature body.

44) Which of the following refrigerant has the maximum ozone depletion potential in the stratosphere?

- a. Ammonia
- b. Carbon dioxide
- c. Fluorine
- d. Sulfur dioxide

45) Which phenomenon is BEST explained by the particle nature of light?

- a. Doppler effect
- b. Interference
- c. Photoelectric effect
- d. Polarization

46) According to the quantum theory of light, the energy of light is carried in discrete units called _____.

- a. alpha particles
- b. photoelectrons
- c. photons
- d. protons

47) Rutherford observed that most of the alpha particles directed at a metallic foil appear to pass through unhindered, with only a few deflected at large angles. What did he conclude?

- a. Atoms can easily absorb and re-emit alpha particles.
- b. Atoms consist mainly of empty space and have small, dense nuclei.
- c. Alpha particles behave like waves when they interact with atom.
- d. Atoms have most of their mass distributed loosely in an electron cloud.

48) When an electron changes from a higher energy to a lower energy state within an atom, a quantum of energy is _____.

- a. absorbed
- b. emitted
- c. fissioned
- d. fused

49) When does nuclear fission occur?

- a. When we cut nuclei into two with a very small cutting device.
- b. When one nucleus bumps into another causing a chain reaction.
- c. When a nucleus divides spontaneously, with no apparent reason.
- d. When electrical forces inside a nucleus overpower forces.

50) When does nuclear fusion release energy?

- a. When uranium emits a neutron
- b. When heavy ions fuse together
- c. When very light nuclei fuse together
- d. When uranium splits into two fragments

PHYSICAL SCIENCE (4)

1) Albert Einstein's Second Postulate of Special Relativity states that the speed of light _____.

- a. can decrease if the speed of the observer decreases
- b. can increase if the speed of light source increases
- c. randomly changes depending upon its original light source
- d. is constant regardless of the speed of the observer or the light source

2) A passenger train travels east at high speed. One passenger is located at the east side of one car, another is located at the west side of that car. In the train frame, these two passengers glance up at the same time. In the earth's frame _____.

- a. they glance up simultaneously
- b. the passengers glance sideways
- c. the passenger at the east side glances up first
- d. the passenger at the west side glances up first

3) Beniell travels at high speed from Earth to the star Alpha Centauri which is four years away. Which one is CORRECT in Beniell's frame?

- a. The clocks on earth and on Alpha Centauri are synchronized.
- b. The trip takes more time than it does in the earth's frame.
- c. Beniell travels to Alpha Centauri over a length that is shorter than four light years.
- d. Alpha Centauri travels to Beniell over a length that is shorter than four light years.

4) One clock is placed on top of a mountain and another clock is at the bottom of the mountain. Ignore the rotation of the earth. Which clock ticks more slowly?

- a. They tick at the same rate.
- b. The one on top of the mountain.
- c. The one at the bottom of the mountain.
- d. Cannot be determined.

5) You are in a windowless spacecraft. What do you need to do to determine whether your space ship is moving at constant non-zero velocity, or is at rest, in an inertial frame of earth?

- a. Make very precise time measurements.
- b. Make very precise mass measurements.
- c. Make very precise length and time measurements.
- d. Nothing, because you cannot succeed no matter what you do.

6) According to the effects of length contraction, from the viewpoint of an observer stationary with respect to a body moving at a uniform speed relative to the observer, which one is CORRECT?

- a. The body contracts along the direction of the motion.
- b. The time it takes for a clock incorporated in the body to tick contracts.
- c. The body is not now contracted but would contract if it were to accelerate.
- d. The body contracts in some direction transverse to the direction of its motion.

7) April and May are identical twins. One day, April embarked on a high speed space travel into a distant star. When he gets back home, who is older between the two?

- a. April
- b. May
- c. None of them because they are still of the same age
- d. Cannot be determined

8) An accelerated frame is a non-inertial frame. Is this TRUE?

- a. True
- b. False
- c. Sometimes true, sometimes false
- d. Not enough information given

9) Which of the following statements is TRUE about the speed of light?

- a. The speed of light has a value that depends on the observer's frame of reference.
- b. The speed of light has the same value for observers in all reference frames.
- c. The speed of light is constant in an inertial frame of reference.
- d. The speed of light is slower in a moving frame of reference.

10) A person is riding a moped that is traveling at 20 m/s. What is the speed of the ball if the moped rider throws a ball forward at 4 m/s while riding the moped?

- a. 16 m/s
- b. 20 m/s
- c. 24 m/s
- d. 80 m/s

11) According to Einstein, what is considered the fourth dimension?

- a. Curled dimension
- b. Horizontal dimension
- c. Space dimension
- d. Time dimension

12) As you observe a fish inside an aquarium, the fish appears to be bigger when underwater. When observed through the side, the fish seems closer than if you observe over the top. When you look through the corner, it appears to be that there are two fishes. What explains this observation?

- a. Diffraction
- b. Interference
- c. Reflection
- d. Refraction

13) What is the phenomenon by which the incident light falling on a surface is back into the same medium?

- a. Absorption
- b. Polarization
- c. Reflection
- d. Refraction

14) Which property is responsible for alternating light and dark bands when light passes through two or more narrow slits?

- a. Diffraction
- b. Interference
- c. Polarization
- d. Refraction

15) What happens when a light wave enters into a medium of different optical density?

- a. Its speed and frequency change.
- b. Its speed and wavelength change.
- c. Its frequency and wavelength change.
- d. Its speed, frequency and wavelength change.

16) A ray of light in air is incident on an air-to-glass boundary at an angle of 36 degrees with the normal. If the index of refraction of the glass is 1.65, what is the angle of the refracted ray within the glass with respect to the normal?

- a. 18 degrees
- b. 30 degrees
- c. 46 degrees
- d. 56 degrees

17) If the critical angle for internal reflection inside a certain transparent material is found 48 degrees, what is the index of refraction of the material? (air is outside the material)

- a. 0.74
- b. 1.35
- c. 1.48
- d. 1.53

18) According to the law of reflection, from what angle is light coming after it is reflected from a mirror?

- a. The same angle as the incident ray as measured from the surface of the mirror.
- b. The same angle as the incident ray as measured from the normal to the mirror.
- c. Some light comes directly from the object and some passes through the mirror.
- d. Cannot be determined.

19) Which of the following is the BEST description of a white light?

- a. It is a mixture of every color.
- b. It is a mixture of seven colors.
- c. It is a mixture of red, blue and yellow.
- d. It is a pure color that cannot be broken up.

20) Sunsets often appear to have a more reddish-orange color than moon. Which of the following phenomenon is responsible for this effect?

- a. Rayleigh Scattering
- b. Dispersion
- c. Polarization
- d. Refraction

21) The polarization behavior of light is BEST explained by considering light to be _____.

- a. Particles
- b. Transverse waves
- c. Longitudinal waves
- d. Unpolarized

22) Which type of light vibrates in a variety of planes?

- a. Electromagnetic
- b. Polarized
- c. Transverse
- d. Unpolarized

23) Light is passed through a filter whose transmission axis is aligned horizontally. It then passes through a second filter whose transmission axis is aligned vertically. What will happen to the light after passing through both filters?

- a. It will be polarized
- b. It will be unpolarized
- c. It will be entirely blocked
- d. It will return to its original state

24) Light rays enter a material and scatter. Which BEST describes what happens to the light rays.

- a. Bounce straight back
- b. Move straight through
- c. Spread out in all directions
- d. Move through but in a new direction

25) The energy generated by the sun travels to Earth as electromagnetic waves of varying lengths. Which statement correctly describes an electromagnetic wave with a long wavelength?

- a. It has a high frequency and low energy.
- b. It has a high frequency and high energy.
- c. It has a low frequency and can travel through a vacuum.
- d. It has a low frequency and needs a medium to travel through.

26) Why is the sky blue?

- a. It reflects the color of the ocean.
- b. The color of the outer space is blue.
- c. Blue light is more readily scattered than red light by nitrogen.
- d. Red light is scattered more easily than blue light by dust particles.

27) What is the physical evidence that the core is composed mostly of iron?

- a. Volcanoes regularly erupt material from the core to the surface.
- b. Scientist have sampled the core and determined its composition.
- c. The known mass of Earth requires material of high density at the core.
- d. A and B

28) Which of the following comprised the largest portion of Earth's volume?

- a. Crust
- b. Inner core
- c. Mantle
- d. Outer Core

29) Which of the following statements about the Mohorovicic discontinuity is FALSE?

- a. The Moho separates the crust from the mantle.
- b. The Moho marks the top of a partially molten layer.
- c. The Moho separates denser rocks below from less dense rocks above.
- d. Seismic wave speeds up as they pass across the Moho heading downward.

30) Where do P waves travel the fastest?

- a. Upper mantle
- b. Lower mantle
- c. Outer core
- d. Inner core

31) What is the driving force for the movement of the lithosphere plates?

- a. Heat from the sun
- b. Heat in the atmosphere
- c. Unequal distribution of heat within the Earth
- d. Unequal distribution of heat in the oceans

32) Which evidence supports Alfred Wegener's Continental Drift Theory?

- a. Major rivers on different continents match
- b. Land bridges still exist that connect major continents
- c. The same magnetic directions exist on different continents
- d. Fossils of the same organism have been found on different continents

33) Which of the following is TRUE based on the Plate Tectonic Theory?

- a. The atmosphere is strong and rigid
- b. The lithosphere is divided into spheres
- c. The atmosphere is divided into plates
- d. The atmosphere moves over the lithosphere

34) What type of boundary occurs where two plates move together, causing one plate to descend into the mantle beneath the outer plate?

- a. Convergent boundary
- b. Divergent boundary
- c. Transform fault boundary
- d. Transitional boundary

35) Which are considered as most destructive earthquake waves?

- a. P waves
- b. Q waves
- c. S waves
- d. Surface waves

36) In which of the following climates will chemical weathering be most rapid?

- a. hot and dry
- b. cold and dry
- c. hot and humid
- d. cold and humid

37) Which of the following statements about weathering is FALSE?

- a. Rocks of different compositions weather at different rates.
- b. Heat and heavy rainfall increase the rate of chemical weathering.
- c. The presence of soil slows down the weathering of the underlying bedrock.
- d. The longer a rock is exposed at the surface, the more weathered it becomes.

38) Why do agricultural areas often experience the greatest amount of soil erosion?

- a. Because farms are typically located near streams
- b. Because farmers usually remove trees from their fields
- c. Because they typically occur in areas of moderately steep slopes
- d. Because farming usually involves plowing the soil to plant seeds

39) What can happen to global temperatures for several years after a volcanic eruption?

- a. Temperatures may increase
- b. Temperatures may decrease
- c. Temperatures can create more volcanoes
- d. Temperatures are not affected by volcanic eruption

40) Which of the following correctly describe diastrophism?

- a. It refers to the boundaries between crustal plates.
- b. It refers to a discredited theory of continent formation.
- c. It refers to all processes in which magma moves from Earth's surface or near the surface.
- d. It refers to all the deformation of Earth's crust by bending or breaking in response to great pressures exerted either from below or from within the crust.

41) What is the evaporation of water from plant surfaces especially through stomates?

- a. Condensation
- b. Perspiration
- c. Respiration
- d. Transpiration

42) Which of the following processes form clouds?

- a. Condensation
- b. Evaporation
- c. Precipitation
- d. Transpiration

43) Which of the following is/are a natural factors that may disrupt the water cycle?

- a. Water pollution
- b. Drying of ground water
- c. Mismanaged domestic and industrial use of water
- d. Both A and C

44) What is the mixture of fresh and saltwater typically formed where rivers meet the ocean?

- a. Brackish water
- b. Compound water
- c. Mixture water
- d. Saline water

45) Fresh water is an integral part of hydrologic cycle. How is it produced?

- a. Condensation
- b. Desalination
- c. Evaporation
- d. Transpiration

46) Which of the following is included in the term hydrosphere?

- a. All the water on the planet.
- b. All the fresh water on the planet.

- c. All waters on the surface of the continents.
- d. All the liquid water on the Earth, minus the ice.

47) What is the main difference between swamps and marshes?

- a. Trees versus grassland
- b. High water table versus low
- c. Salt water versus fresh water
- d. Seasonality of precipitation

48) A lake will become saline if _____.

- a. lake levels decrease
- b. precipitation exceeds evaporation
- c. evaporation exceeds precipitation
- d. the lake has no natural drainage outlet

49) What is the other name for typhoon?

- a. Low pressure area
- b. Hurricane
- c. Tornado
- d. Twister

50) What is the difference among typhoon, a hurricane, and a cyclone?

- a. While typhoons are strong storms, cyclones are worse, and hurricane are the strongest of all.
- b. Hurricanes spin clockwise, cyclones spin counter clockwise, and typhoons are actually tidal waves.
- c. Typhoons are found near the equator, hurricanes in the midlatitudes and typhoons in the arctic and antarctic.
- d. The storms are the same but the names are used in the Western Pacific, North America and Indian Ocean, respectively.

PHYSICAL SCIENCE (5)

1) Which one of these revolving weather is the smallest?

- a. Hurricane
- b. Tornado
- c. Tropical cyclone
- d. Typhoon

2) What happens when the rate of evaporation equals the rate of condensation?

- a. Clouds form
- b. Precipitation occurs
- c. The humidity decreases
- d. The dew point is reached

3) Which is the cause of change of seasons?

- a. The rotation of the Earth
- b. The tilt of Earth's axis
- c. The rain-shadow effect
- d. The sizes and shapes of land surface features

4) What causes changes in weather?

- a. Cloud formation
- b. Water evaporation
- c. Air humidity
- d. Air masses interaction

5) What part of the atmosphere protects Earth's surface from harmful ultraviolet radiation?

- a. Exosphere
- b. Mesosphere
- c. Stratosphere
- d. Troposphere

6) The aurora borealis and aurora australis are caused by the interaction between charged particles and Earth's magnetic field. What layer of Earth's atmosphere contains these particles?

- a. Exosphere
- b. Mesosphere
- c. Ozonosphere
- d. Thermosphere

7) Which is a depp layer of electrically charged molecules and atoms that reflects radio waves?

- a. Exosphere
- b. Ionosphere
- c. Radiosphere

d. Troposphere

8) The Earth completes one revolution around the sun in 365 1/4 days. Compared to earth, how long does it takes Mercury to complete one revolution?

- a. Less than the Earth
- b. Greater than the Earth
- c. The same as the Earth
- d. Cannot be determined

9) What two properties of stars are being directly compared in the Hertzsprung-Russel Diagram?

- I. Size
- II. Temperature
- III. Luminosity
- IV. Density
- a. I and II
- b. II and III
- c. III and IV
- d. I and IV

10) How is the atmospheric pressure of Mars when compared to the atmospheric pressure of the Earth?

- a. Half as much as that of that Earth
- b. About the same as the Earth
- c. About 1/100th that of the Earth
- d. About 100 times as great as the Earth

11) Which of the following statements is TRUE for both Saturn and Jupiter?

- a. Both rotate faster than the Earth
- b. Both rotate slower than the Earth
- c. Only one rotates rapidly while the other rotates very slowly
- d. Their periods of rotation are linked to their period of revolution

12) According to Kepler's Laws, what is the shape of all orbits of the planets?

- a. Ellipse
- b. Hyperbola
- c. Oblate spheroid
- d. Parabola

13) What is the first successful space station program that tested the ability of astronauts to work for long periods and studied their body responses to weightless conditions?

- a. Apollo 11
- b. Sputnik 1
- c. Salyut
- d. US Skylab

14) The universe is estimated to be between 10 and 20 billion years old. This estimate is based on the value of which constant?

- a. Speed of light
- b. Hubble constant
- c. Mass of the Earth
- d. Mass of the electron

15) On which of the following planets would the sun rise in the west?

- a. Mars
- b. Jupiter
- c. Saturn
- d. Venus

16) Which of the following describes an albedo?

- a. brightness of the star
- b. phase changes of a planet
- c. wobbling motion of a planet
- d. amount of light a planet reflects

17) Where are most asteroids located?

- a. between Earth and Mars
- b. between Mars and Venus
- c. between Mars and Jupiter
- d. between Jupiter and Saturn

18) Which refers to the precession of the Earth?

- a. Change from night to day
- b. Earth's motion around the sun
- c. Effect of the moon on the Earth's orbit
- d. Change in orientation of the Earth's axis

19) What kind of eclips do we see when the moon is entirely within Earth's umbral shadow?

- a. total solar
- b. total lunar
- c. partial solar
- d. partial lunar

20) At which phase of the moon do solar eclipse occur?

- a. Full moon
- b. First quarter
- c. New moon
- d. Third quarter

21) If a lunar eclipse occurs tonight, when is the soonest that a solar elcipse can occur?

- a. Tomorrow
- b. In two weeks
- c. In one month
- d. In one year

22) Which one is considered as one of the most important results of the Apollo missions to the moon?

- a. Discovery of subsurface water.
- b. Determination of the age of moon rocks.
- c. First observations of surface features called craters.
- d. Proof that craters were produced by volcanic eruptions.

23) What is the problem experienced by astronauts staying for long periods of time aboard the international space station?

- a. Weight loss due to diet
- b. Reduced exposure to sunlight
- c. Muscle loss due to lack of exercise
- d. Effects of lower gravity on the body

24) NASA developed a filtration process to make waste water on space flights renewable. Where might this filtration process be used on Earth?

- a. In areas where water is salty.
- b. In areas where water is contaminated.
- c. In areas where water is used for recreation.
- d. In areas where water contains hard minerals.

25) What must be done in order to preserve the biosphere for future generations?

- a. Put all wild animals and game preserves.
- b. Make use of technology to develop.
- c. Explore ways to drain and fill wetlands along the sea coast.
- d. Understand how living things interact with their environment.

26) Which of the following can help ensure a suitable environment for the future generations?

- a. Biological controls
- b. Chemical dumps
- c. Fossil fuels
- d. Pesticides

27) Which human activity would be more likely to have a negative impact on the environment?

- a. Investigating the use of the biological controls for the pests.
- b. Using reforestation and cover cropping to control soil erosion.
- c. Using insecticides to kill insects that compete with human for food.
- d. Developing a research aimed toward the preservation of endangered species.

28) Which is the main cause of the depletion of the ozone layer?

- a. Decrease in temperature.
- b. Decrease in the amount of air pollutants.
- c. Increase in number of marine ecosystem.
- d. Increase in temperature due to atmospheric pollutants.

29) DDT was used to kill mosquitoes. It was observed that lizards that ate the mosquitoes slowed down and died. Eventually, the population of cats that ate lizards diminished. What can be inferred from this situation?

- a. DDT can cause harm to all organisms.
- b. Using DDT is a reliable way to eliminate insect predators.
- c. The mosquito and other organisms were all competing for same resources.
- d. Environmental changes that affect one population can affect other population.

30) Teddy is a seasoned famer updated on new trends in agriculture. In his effort to make and harvest the best rice crops, he tried to implement the environmentalist's way of controlling pests as mandated in the integrated pest management. Teddy later found out that all of the following processes made best contributions to a good and safe harvest EXCEPT _____.

- a. use of natural enemies
- b. planting variety of crops
- c. use of narrow-spectrum pesticides
- d. use of genetically engineered crops

31) What is the most important factor for the success of animal population?

- a. Adaptability
- b. Interspecies activity
- c. Natality
- d. Unlimited food

32) Why does starvation occur?

- a. There is not enough fertile land worldwide on which to grow food.
- b. Forces in nature (drought, pests, floods) wipe out food supplies.
- c. Population is growing at a faster rate than the world's ability to produce.
- d. Some parts of the world lack food while other parts of the world produce more than they consume.

33) Which of the following presents the greatest threat to the survival of numerous plants and animal species.

- a. Greenhouse effect
- b. Continued burning of fossil fuel
- c. Disappearance of world's rainforest
- d. Dumping of toxic waste in the least industrialized nations

34) Which factor BEST explains why the human population has grown so rapidly over the last 100 years?

- a. Humans have decreased their reliance on natural resources.
- b. Humans have increased the amount of resources available on Earth.
- c. Humans have increased the carrying capacity of the biosphere for the population.
- d. Humans have developed physical characteristics that increase their competitive advantage.

35) Which human activity causes maximum environmental pollution having regional and global impact?

- a. Agriculture
- b. Industrialization
- c. Mining
- d. Urbanization

36) Which of the following statements in relation to sustainable development is FALSE?

- a. Sustainability has the main objective of purely focusing on the natural environment.
- b. Sustainable development of various countries and the entire world is the only solution left with mankind to survive for a longer period on Earth.
- c. Sustainable development not only considers the protection of the environment but also the maintenance of economic viability as well as social and ethical considerations.
- d. Sustainable development is defined as the development that meets the needs of present without compromising the ability of our future generations to meet their own needs.

37) What is the process of converting nitrate to nitrogen gas and nitrous oxide?

- a. Ammonification
- b. Denitrification
- c. Nitrogen fixation
- d. Transpiration

38) Which of the following chemicals enters living organisms primarily from the atmosphere rather than from rocks or soil?

- a. Calcium
- b. Carbon
- c. Sodium
- d. Sulfur

39) What is the conversion of atmospheric free nitrogen gas to ammonia which occurs through the activities of certain bacteria and cyanobacteria?

- a. Denitrification
- b. Nitrification
- c. Nitrogen fixation

d. Oxidation

40) How do animals get the nitrogen they need?

- a. Directly from bacteria in the soil
- b. From the process of denitrification
- c. By breathing in atmospheric nitrogen
- d. By consuming plants or other animals

41) The following are ways by which phosphorous enters the environment EXCEPT _____.

- a. Run off
- b. Animal waste
- c. Erosion of rocks
- d. Photosynthesis in plants

42) Because of biogeochemical cycling?

- a. Nutrients are circulated throughout the biosphere.
- b. The Earth creates new chemicals that replace those that were used up by organisms.
- c. Organisms eventually run out of needed elements, compounds and other form of matter.
- d. Human activity has no effects on elements, chemical compounds, and other forms of matter.

43) Which of the biogeochemical cycles can impact all of the others most directly?

- a. Carbon cycle
- b. Hydrologic cycle
- c. Nitrogen cycle
- d. Phosphorous cycle

44) What human activity has added the most carbon in the atmosphere?

- a. Burning fossil fuels
- b. Mining fossil fuels
- c. Increasing soil erosion
- d. Cutting down the rainforests

Part 1 ANSWERS:

1. B
2. C
3. C
4. C
5. D
6. C
7. B
8. D
9. A
10. A
11. B
12. B
13. C
14. B
15. D
16. D
17. B
18. D
19. D
20. A
21. D
22. C
23. C
24. A
25. A
26. B
27. C
28. C
29. C
30. A
31. B
32. A
33. D
34. C
35. A
36. A
37. C
38. C
39. B
40. A
41. A
42. D
43. C
44. D
45. B
46. B
47. D
48. D
49. C
50. C

Part 2 ANSWERS:

1. D
2. D
3. A
4. D
5. B
6. B
7. C
8. C
9. A
10. D
11. B
12. B
13. D
14. D
15. D
16. B
17. B
18. D
19. D
20. A
21. B
22. D
23. B
24. C
25. A
26. D
27. D
28. A
29. B
30. D
31. A
32. C
33. D
34. C
35. C
36. B
37. C
38. D
39. B
40. D
41. A
42. B
43. C
44. A
45. A
46. A
47. A
48. D
49. C
50. A

Part 3 ANSWERS:

1. B
2. C
3. C
4. D
5. A
6. C
7. D
8. C
9. A
10. B
11. C
12. A
13. D
14. D
15. D
16. C
17. C
18. C
19. C
20. D
21. B
22. D
23. A
24. C
25. B
26. C
27. B
28. A
29. B
30. C
31. C
32. A
33. A
34. C
35. B
36. A
37. A
38. A
39. C
40. A
41. D
42. B
43. D
44. C
45. C
46. C
47. B
48. B
49. D
50. C

Part 4 ANSWERS:

1. D
2. D
3. D
4. C
5. D
6. A
7. B
8. A
9. C
10. C
11. D
12. D
13. C
14. B
15. B
16. A
17. B
18. B
19. A
20. A
21. B
22. D
23. C
24. C
25. C
26. C
27. C
28. C
29. B
30. B
31. C
32. D
33. B
34. A
35. D
36. C
37. C
38. D
39. B
40. D
41. D
42. A
43. B
44. A
45. B
46. A
47. A
48. D
49. B
50. D

Part 5 ANSWERS:

1. B
2. D
3. B
4. D
5. C
6. D
7. B
8. A
9. B
10. C
11. A
12. A
13. D
14. B
15. D
16. D
17. C
18. D
19. B
20. C
21. B
22. D
23. D
24. B
25. D
26. A
27. C
28. D
29. D
30. C
31. A
32. D
33. C
34. C
35. B
36. A
37. B
38. B
39. C
40. D
41. D
42. A
43. B
44. A