

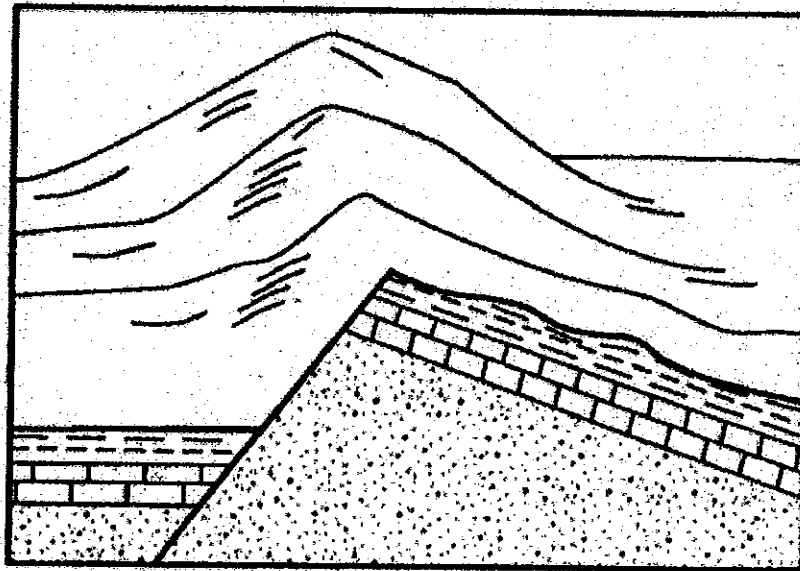
SAMPLE TEST QUESTIONS:

1. Compared to dull and rough rock surfaces, shiny and smooth rock surfaces are most likely to cause sunlight to be
 - A. reflected
 - B. refracted
 - C. polarized
 - D. diffused
2. Which sedimentary rock is most likely to be changed to slate during metamorphism?
 - A. breccia
 - B. conglomerate
 - C. dolostone
 - D. shale
3. The water sphere of the earth is known as the
 - A. atmosphere
 - B. troposphere
 - C. lithosphere
 - D. hydrosphere
4. Compared to Earth's crust, Earth's core is believed to be
 - A. less dense, cooler, and composed of more iron
 - B. less dense, hotter, and composed of less iron
 - C. more dense, hotter, and composed of more iron
 - D. more dense, cooler, and composed of less iron
5. What are the two most abundant elements by mass found in Earth's crust?
 - A. aluminum and oxygen
 - B. sodium and chlorine
 - C. calcium and carbon
 - D. oxygen and silicon
6. Two streams begin at the same elevation and have equal volumes. Which statement best explains why one stream could be flowing faster than the other stream?
 - A. The faster stream contains more dissolved minerals.
 - B. The faster stream has a much steeper gradient.
 - C. The streams are flowing in different directions.
 - D. The faster stream has a temperature of 10°C, and the slower stream has a temperature of 20°C.

7. The four particles shown in the table below are of equal volume and are dropped into a column filled with water. Which particle would usually settle most rapidly?
- A. A B. B C. C D. D

Particle	Shape	Density
A	flat	2.5 g/cm ³
B	flat	3.0 g/cm ³
C	round	2.5 g/cm ³
D	round	3.0 g/cm ³

8. The diagram below shows the bedrock structure beneath a series of hills. Which process was primarily responsible for forming the hills?



- A. folding B. faulting C. deposition D. vulcanism
9. Which surface ocean current transports warm water to higher latitudes?
- A. Labrador Current B. Falidand Current
C. Gulf Stream D. West Wind Drift
10. Since 1960, the levels of CO₂ in the atmosphere have steadily increased. The most likely cause of this overall increase in the level of CO₂ is an increase in the
- A. number of violent storms
B. number of volcanic eruptions
C. use of nuclear power
D. use of fossil fuels

11. Clouds usually form when
- A. air temperature reaches the dewpoint.
 - B. evaporation has warmed the surrounding air.
 - C. relative humidity is 0% .
 - D. condensation nuclei have been removed from the air.
12. The length of an Earth day is determined by the time required for approximately one
- A. Earth rotation .
 - B. Earth revolution.
 - C. Sun rotation.
 - D. Sun revolution.
13. What is the basic difference between ultraviolet, visible, and infrared radiation?
- A. half-life
 - B. temperature
 - C. wavelength
 - D. wave velocity
14. The apparent daily path of the Sun changes with the seasons because
- A. Earth's axis is tilted.
 - B. Earth's distance from the Sun changes .
 - C. the Sun revolves.
 - D. the Sun rotates.
15. This object orbits Earth in both the Earth-centered (geocentric) and Sun-centered (heliocentric) models of our solar system?
- A. the Moon
 - B. Venus
 - C. the Sun
 - D. *Polaris*
16. Summer days in New York State are likely to be hotter than winter days because in summer
- A. Earth is closer to the Sun.
 - B. the number of sunspots increases.
 - C. Earth's northern axis is tilted toward the Sun .
 - D. the Sun gives off more energy .
17. Energy is transferred from the Sun to Earth mainly by
- A. molecular collisions.
 - B. density currents.
 - C. electromagnetic waves .
 - D. red shifts.

18. The apparent rising and setting of the Sun, as viewed from Earth, is caused by
- A. Earth's rotation.
 - B. Earth's revolution.
 - C. the Sun's rotation.
 - D. the Sun's revolution .
19. A cycle of Moon phases can be seen from Earth because the
- A. Moon's distance from Earth changes at a predictable rate.
 - B. Moon's axis is tilted.
 - C. Moon spins on its axis.
 - D. Moon revolves around Earth.
20. The worker's pull on the handle of the cart can best be described as a force having
- A. magnitude, only.
 - B. direction, only.
 - C. both magnitude and direction .
 - D. neither magnitude nor direction.
21. A car travels 90. meters due north in 15 seconds. Then the car turns around and travels 40. meters due south in 5.0 seconds. What is the magnitude of the average velocity of the car during this 20.-second interval?
- A. 2.5 m/s
 - B. 5.0 m/s
 - C. 6.5 m/s
 - D. 7.0 m/s
22. How far will a brick starting from rest fall freely in 3.0 seconds?
- A. 15 m
 - B. 29 m
 - C. 44 m
 - D. 88 m
23. If the sum of all the forces acting on a moving object is zero, the object will
- A. slow down and stop.
 - B. change the direction of its motion.
 - C. accelerate uniformly.
 - D. continue moving with constant velocity.
24. A spring scale reads 20 Newtons as it pulls a 5.0-kilogram mass across a table. What is the magnitude of the force exerted by the mass on the spring scale?
- A. 49 N
 - B. 20 N
 - C. 5.0 N
 - D. 4.0 N

25. A net force of 10 Newtons accelerates an object at 5.0 meters per second². What net force would be required to accelerate the same object at 1.0 meter per second²?
- A. 1.0 N
 - B. 2.0 N
 - C. 5.0 N
 - D. 50. N
26. The amount of work done against friction to slide a box in a straight line across a uniform, horizontal floor depends most on the
- A. time taken to move the box
 - B. distance the box is moved
 - C. speed of the box
 - D. direction of the box's motion
27. A 1,200-kilogram car traveling at 10 meters per second hits a tree and is brought to rest in 0.10 second. What is the magnitude of the average force acting on the car to bring it to rest?
- A. $1.2 \times 10^2 \text{ N}$
 - B. $1.2 \times 10^3 \text{ N}$
 - C. $1.2 \times 10^4 \text{ N}$
 - D. $1.2 \times 10^5 \text{ N}$
28. A 3.0-kilogram block is initially at rest on a frictionless, horizontal surface. The block is moved 8.0 meters in 2.0 seconds by the application of a 12-newton horizontal force.
- What is the average power developed while moving the block?
- A. 24 W
 - B. 32 W
 - C. 48 W
 - D. 96 W
29. An object weighing 15 newtons is lifted from the ground to a height of 0.22 meter. The increase in the object's gravitational potential energy is approximately
- A. 310 J
 - B. 32 J
 - C. 3.3 J
 - D. 0.34 J
30. As an object falls freely, the kinetic energy of the object
- A. decreases
 - B. increases
 - C. remains the same

31. When a neutral metal sphere is charged by contact with a positively charged glass rod, the sphere
- A. loses electrons
 - B. gains electrons
 - C. loses protons
 - D. gains protons
32. A proton has approximately the same mass as
- A. a neutron
 - B. an alpha particle
 - C. a beta particle
 - D. an electron
33. Compared to the charge and mass of a proton, an electron has
- A. the same charge and a smaller mass
 - B. the same charge and the same mass
 - C. an opposite charge and a smaller mass
 - D. an opposite charge and the same mass
34. Which symbols represent atoms that are isotopes?
- A. C-14 and N-14
 - B. O-16 and O-18
 - C. I-131 and I-131
 - D. Rn-222 and Ra-222
35. When electrons in an atom in an excited state fall to lower energy levels, energy is
- A. absorbed, only
 - B. released, only
 - C. neither released nor absorbed
 - D. both released and absorbed
36. What is the mass number of an atom which contains 28 protons, 28 electrons, and 34 neutrons?
- A. 28
 - B. 56
 - C. 62
 - D. 90
37. An ion with 5 protons, 6 neutrons, and a charge of 3+ has an atomic number of
- A. 5
 - B. 6
 - C. 8
 - D. 11

38. When combining with nonmetallic atoms, metallic atoms generally will
- lose electrons and form negative ions
 - lose electrons and form positive ions
 - gain electrons and form negative ions
 - gain electrons and form positive ions
39. When a metal atom combines with a nonmetal atom, the nonmetal atom will
- lose electrons and decrease in size
 - lose electrons and increase in size
 - gain electrons and decrease in size
 - gain electrons and increase in size
40. An atom of which of the following elements has the greatest ability to attract electrons?
- silicon
 - sulfur
 - nitrogen
 - chlorine
41. Atoms of elements in a group on the Periodic Table have similar chemical properties. This similarity is most closely related to the atoms'
- number of principal energy levels
 - number of valence electrons
 - atomic numbers
 - atomic masses
42. A strontium atom differs from a strontium ion in that the atom has a greater
- number of electrons
 - number of protons
 - atomic number
 - mass number
43. As ice cools from 273 K to 263 K, the average kinetic energy of its molecules will
- decrease
 - increase
 - remain the same
44. Solid X is placed in contact with solid Y. Heat will flow spontaneously from X to Y when
- X is 20°C and Y is 20°C
 - X is 10°C and Y is 5°C
 - X is -25°C and Y is -10°C
 - X is 25°C and Y is 30°C

45. The phase change represented by the equation $I_2(s) \rightarrow I_2(g)$ is called
- sublimation
 - condensation
 - melting
 - boiling
46. A compound differs from a mixture in that a compound always has a
- homogeneous composition
 - maximum of two components
 - minimum of three components
 - heterogeneous composition
47. As the pressure of a gas at 2 atm is changed to 1 atm at constant temperature, the volume of the gas
- decreases
 - increases
 - remains the same
48. Under the same conditions of temperature and pressure, a liquid differs from a gas because the particles of the liquid
- are in constant straight-line motion
 - take the shape of the container they occupy
 - have no regular arrangement
 - have stronger forces of attraction between them
49. Which substance cannot be decomposed into simpler substances?
- ammonia
 - aluminum
 - methane
 - methanol
50. How are the boiling and freezing points of a sample of water affected when salt is dissolved in the water?
- The boiling point decreases and the freezing point decreases.
 - The boiling point decreases and the freezing point increases.
 - The boiling point increases and the freezing point decreases.
 - The boiling point increases and the freezing point increases.
51. Which statement describes a chemical property?
- Its crystals are a metallic gray.
 - It dissolves in alcohol.
 - It sublimates and forms a colored gas.
 - It reacts with hydrogen to form a gas.

52. A student investigated the physical and chemical properties of a sample of unknown gas and then investigated the gas. Which statement represents a conclusion rather than an experimental observation?
- A. The gas is colorless.
 - B. The gas is carbon dioxide.
 - C. When the gas is bubbled in limewater, the liquid becomes cloudy.
 - D. When placed in the gas, a flaming splint stops burning.
53. Petroleum is classified chemically as
- A. a substance
 - B. a compound
 - C. an element
 - D. a mixture
54. What occurs as potassium nitrate is dissolved in a beaker of water, indicating that the process is endothermic?
- A. The temperature of the solution decreases.
 - B. The temperature of the solution increases.
 - C. The solution changes color.
 - D. The solution gives off a gas.
55. The following set of procedures was used by a student to determine the heat of solution of NaOH.
- A) Read the original temperature of the water
 - B) Read the final temperature of the water
 - C) Pour the water into a beaker
 - D) Stir the mixture
 - E) Add the sodium hydroxide

What is the correct order of procedures for making this determination?

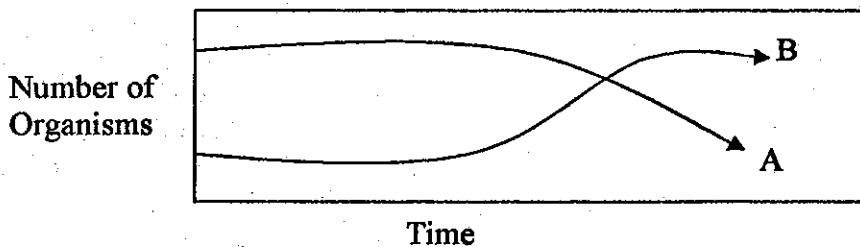
- A. A-> C-> E-> B-> D->
 - B. E-> D-> C-> A-> B
 - C. C-> A-> E-> D-> B
 - D. C-> E-> D-> A-> B
56. To determine the density of an irregularly shaped object, a student immersed the object in 21.2 milliliters of H₂O in a graduated cylinder, causing the level of the H₂O to rise to 27.8 milliliters. If the object had a mass of 22.4 grams, what was the density of the object.
- A. 27.8 g / mL
 - B. 6.6 g / mL
 - C. 3.0 g / mL
 - D. 3.4 g / mL

57. Salt A and salt B were dissolved separately in 100 mL beakers of water. The water temperatures were measured and recorded as shown in the table below:
Salt A: initial water temp. 25.1°C *final water temp.* 30.2°C
Salt B: initial water temp. 25.1°C *final water temp.* 20.0°C
- Which statement is a correct interpretation of these data?
- A. The dissolving of only salt A was endothermic.
 - B. The dissolving of only salt B was exothermic
 - C. The dissolving of both salt A and salt B was endothermic.
 - D. The dissolving of salt A was exothermic and the dissolving of salt B was endothermic.
58. Which statement explains why the speed of some chemical reactions is increased when the surface area of the reactant is increased?
- A. This change increases the density of the reactant particles.
 - B. This change increases the concentration of the reactant.
 - C. This change exposes more reactant particles to a possible collision.
 - D. This change alters the electrical conductivity of the reactant particles.
59. When a catalyst is added to a system at equilibrium, a decrease occurs in the
- A. activation energy
 - B. heat of reaction
 - C. potential energy of the reactants
 - D. potential energy of the products
60. Given the change of phase: $\text{CO}_2(\text{g})$ changes to $\text{CO}_2(\text{s})$, the entropy of the system
- A. decreases
 - B. increases
 - C. remains the same
61. Which procedure will increase the solubility of KCl in water?
- A. stirring the solute and solvent mixture
 - B. increasing the surface area of the solute
 - C. raising the temperature of the solvent
 - D. increasing the pressure on the surface of the solvent
62. What is the maximum number of covalent bonds that an atom of carbon can form?
- A. 1
 - B. 2
 - C. 3
 - D. 4
63. Which element is present in all organic compounds?
- A. carbon
 - B. nitrogen
 - C. oxygen
 - D. phosphorous

64. Which quantities are conserved in all oxidation-reduction reactions?
A. charge, only
B. mass only
C. both charge and mass
D. neither charge and mass
65. A battery consists of which type of cells?
A. electrolytic
B. electrochemical
C. electroplating
D. electromagnetic
66. Given the reaction: $\underline{\quad}\text{Mg} + \underline{\quad}\text{Cr}^{3+} \rightarrow \underline{\quad}\text{Mg}^{2+} + \underline{\quad}\text{Cr}$
When the equation is correctly balanced using smallest whole numbers, the sum of the coefficients will be
A. 10
B. 7
C. 5
D. 4
67. Which solution will change red litmus to blue?
A. HCl(aq)
B. NaCl(aq)
C. $\text{CH}_3\text{OH(aq)}$
D. NaOH(aq)
68. Which formula represents a salt?
A. KOH
B. KCl
C. CH_3OH
D. CH_3COOH
69. Given the equation: $\text{H}^+ + \text{OH}^- \leftrightarrow \text{H}_2\text{O}$
Which type of reaction does the equation represent?
A. esterification
B. decomposition
C. hydrolysis
D. neutralization
70. An acidic solution could have a pH of
A. 7
B. 10
C. 3
D. 14

71. A student wishes to prepare approximately 100 milliliters of an aqueous solution of 6M HCl using 12 M HCl. Which procedure is correct?
- A. adding 50 mL of 12 M HCl to 50 mL of water while stirring the mixture steadily.
 - B. adding 50 mL of 12 M HCl to 50 mL of water and then stirring the mixture steadily.
 - C. adding 50 mL of water to 50 mL of 12 M HCl while stirring the mixture steadily.
 - D. adding 50 mL of water to 50 mL of 12 M HCl and then stirring the mixture steadily.
72. Which particle cannot be accelerated in a magnetic field?
- A. alpha particle
 - B. beta particle
 - C. neutron
 - D. proton
73. Fissionable uranium-233, uranium 235, and plutonium-239 are used in nuclear reactors as
- A. coolants
 - B. control rods
 - C. moderators
 - D. fuels
74. In a fusion reaction, reacting nuclei must collide. Collisions between two nuclei are difficult to achieve because the nuclei are
- A. both negatively charged and repel each other
 - B. both positively charged and repel each other
 - C. oppositely charged and attract each other
 - D. oppositely charged and repel each other
75. Which are the four most abundant elements in living cells?
- A. carbon, oxygen, nitrogen, sulfur
 - B. carbon, oxygen, hydrogen, nitrogen
 - C. carbon, oxygen, sulfur, phosphorus
 - D. carbon, sulfur, hydrogen, magnesium
76. Viruses are exceptions to the cell theory, but they have some characteristics of living things. What is one of these characteristics?
- A. They are made up of many specialized cells.
 - B. They contain genetic material.
 - C. They reproduce by mitosis.
 - D. They contain chlorophyll.

77. Which pair of compounds can be classified as inorganic?
 A. nucleic acids and minerals
 B. proteins and water
 C. water and salts
 D. nucleic acids and proteins
78. Which is an organic compound found in most cells?
 A. glucose
 B. water
 C. sodium chloride
 D. oxygen gas
79. Hydras, earthworms, grasshoppers, and humans are classified in the same
 A. genus
 B. species
 C. phylum
 D. kingdom
80. An ecosystem is represented below. This ecosystem will be self-sustaining if



- A. the organisms labeled A outnumber the organisms labeled B
 B. the organisms labeled A are equal in number to the organisms labeled B
 C. the type of organisms represented by B are eliminated
 D. materials cycle between the organisms labeled A and the organisms labeled B
81. An organelle differs from an organ in that an organelle
 A. is a substructure of a cell
 B. contains one specific type of tissue
 C. is larger than an organ
 D. cannot be stained
82. According to the heterotroph hypothesis, autotrophs were able to evolve because heterotrophs made conditions more favorable by
 A. producing chlorophyll for plants
 B. adding carbon dioxide to the environment
 C. storing energy in the bonds of inorganic compounds
 D. manufacturing food from carbon dioxide and oxygen

83. Which structure includes all of the others?
A. nucleolus
B. nucleus
C. chromosomes
D. genes
84. Which organelle contains the enzymes needed to synthesize ATP in the presence of oxygen?
A. mitochondria
B. Golgi body
C. endoplasmic reticulum
D. nucleus
85. Which structure is usually present only in animal cells?
A. vacuole
B. cell wall
C. nucleus
D. centriole
86. Sodium ions are "pumped" from a region of lower concentration to a region of higher concentration. This process required energy and is called
A. diffusion
B. passive transport
C. osmosis
D. active transport
87. Normally, in the process of osmosis, the net flow of water molecules into or out of the cell depends upon differences in the
A. concentration of water molecules inside and outside the cell
B. concentration of enzymes on either side of the cell membrane
C. rate of molecular motion on either side of the cell membrane
D. rate of movement of insoluble molecules inside the cell
88. Molecules that are too large to pass through the pores of a cell membrane may enter the cell by a process known as
A. hydrolysis C. cyclosis
B. pinocytosis D. synthesis
89. The body cells of most multicellular animals are not in direct contact with the external environment. These cells are supplied with materials from the environment by
A. a central nervous system
B. hydrolytic enzymes
C. sense receptors
D. a circulatory system

90. A biochemical compound that readily combines with oxygen and distributes it throughout the human body is
- A. urea
 - B. water
 - C. acetylcholine
 - D. hemoglobin
91. In humans, gas exchange and gas transport occur as a result of the functioning of a system of
- A. phloem tubes
 - B. lungs and blood vessels
 - C. ganglia
 - D. setae
92. In humans, which of the following is produced within certain bones?
- A. red blood cells
 - B. striated muscle cells
 - C. bile
 - D. urea
93. A molecule of DNA is a polymer composed of
- A. glucose
 - B. amino acids
 - C. fatty acids
 - D. nucleotides
94. In humans, carbon dioxide that is excreted passes from the blood directly into the
- A. liver
 - B. alveoli
 - C. trachea
 - D. kidneys
95. The presence of DNA is important for cellular metabolic activities because DNA
- A. directs the production of enzymes
 - B. is a structural component of cell walls
 - C. directly increases the solubility of nutrients
 - D. is the major component of cytoplasm
96. In squirrels, the gene for gray fur (G) is dominant over the gene for black fur (g). If 50% of a large litter of squirrels are gray, the parental cross that produced this litter was most likely
- A. GG x Gg
 - B. GG x GG
 - C. Gg x gg
 - D. gg x gg

97. Which nitrogenous bases make up DNA nucleotides?
A. adenine, thymine, guanine, and cytosine
B. adenine, uracil, guanine and cytosine
C. adenine, thymine, uracil, and cytosine
D. adenine, thymine, guanine, and uracil
98. Which represents the genotype of a homozygous condition?
A. Bb
B. BC
C. bb
D. bc
99. Which cross could produce a child with type O blood?
A. AO x BB
B. AA x BO
C. AB x OO
D. AO x BO
100. Geneticists have observed that fruit flies that commonly inherit vestigial wings also inherit lobed eyes. Observations such as this have helped to develop the genetic concept known as
A. segregation
B. dominance
C. gene linkage
D. crossing-over
101. What percentages can be expected in the offspring of cross between a female carrier for color blindness and a male with normal color vision?
A. 25% normal male, 25% colorblind males, 25% normal females, 25% carrier females
B. 25% normal males, 25% colorblind males, 25% carrier females, 25% colorblind females
C. 75% normal males, 25% carrier females
D. 50% colorblind males, 50% colorblind females
102. Chromosomes normally occur as homologous pairs in
A. a sperm cell
B. an egg cell
C. a zygote
D. a gamete
103. By which process are two daughter nuclei formed that are identical to each other and to the original nucleus?
A. meiosis
B. synapsis
C. fertilization
D. mitosis

104. A man with a blood genotype AO marries a woman with a blood genotype of AO. What blood types could be expected in their children?
- A. type A, only
 - B. type O, only
 - C. both type A and type O
 - D. neither type A nor type O
105. Because the gene for hemophilia is located on the X-chromosome, it is normally impossible for a
- A. carrier mother to pass the gene to her son
 - B. hemophiliac father to pass the gene on to his son
 - C. hemophiliac father to pass the gene to his daughter
 - D. carrier mother to pass the gene to her daughter
106. A hybrid black-coated guinea pig produces two million sperm cells. Approximately what number of its sperm cells contain the recessive gene for white coat color?
- A. 1 million
 - B. 2 million
 - C. 0.5 million
 - D. 0
107. When many hybrid tall pea plants are cross-pollinated, the offspring produced will probably be
- A. 100% homozygous tall
 - B. 100% heterozygous tall
 - C. 50% homozygous tall
 - D. 50% heterozygous tall
108. Some individuals with blood group A may inherit the genes for blond hair, while other individuals with blood group A may inherit the genes for brown hair. This can be explained by the principle of
- A. dominance
 - B. multiple alleles
 - C. independent assortment
 - D. incomplete dominance
109. The outward appearance (gene expression) of a particular trait in an organism is referred to as
- A. a genotype
 - B. a phenotype
 - C. an allele
 - D. a chromosome

110. Which is a breeding method used by humans to produce new and improved varieties of plants and animals?
- A. independent assortment
 - B. crossing-over
 - C. artificial selection
 - D. natural selection
111. Mendel's discovery that characteristics are inherited due to the transmission of hereditary factors resulted from his
- A. careful microscopic examinations of genes and chromosomes
 - B. dissections to determine how fertilization occurs in pea plants
 - C. breeding experiments with many generations of fruit flies
 - D. analysis of the offspring produced from many pea plant crosses
112. Two nucleotide sequences found in two different species are almost exactly the same. This suggests that these species
- A. are evolving into the same species
 - B. contain identical DNA
 - C. may have similar evolutionary histories
 - D. have the same number of mutations
113. The spotted touch-me-not, a flowering plant, has seed pods that burst open when touched and forcefully eject their seeds. Such an adaptation is favorable because it
- A. aids in the dispersal of the species.
 - B. attracts insects that aid in pollination.
 - C. prevents germination within the seed pod.
 - D. can cause genetic changes to occur
114. Which group of organisms is believed to be among the earliest to evolve on Earth?
- A. arthropods
 - B. coelenterates
 - C. protozoans
 - D. reptiles
115. The concept that species have changed over long periods of time is known as
- A. ecology
 - B. embryology
 - C. spontaneous generation
 - D. evolution
116. A child is born with an extra chromosome in each of its cells. This condition is usually the result of
- A. nondisjunction
 - B. crossing-over
 - C. segregation
 - D. hybridization

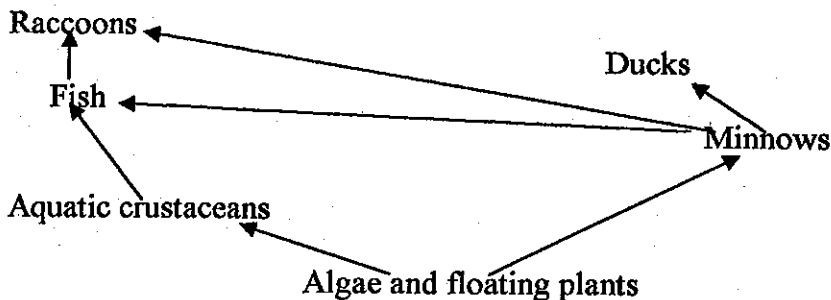
117. The concept that new varieties of organisms are still evolving is best supported by the
- A. increasing need for new antibiotics.
 - B. increasing number of individuals in the human population.
 - C. decreasing number of new fossils discovered in undisturbed rock layers.
 - D. decreasing activity of photosynthetic organisms due to warming of the atmosphere.
118. Variations within a species are most likely the result of
- A. mutations and sexual reproduction
 - B. synapsis and disjunction
 - C. mitosis and asexual reproduction
 - D. overpopulation and recombination
119. Mutations can be considered as one of the raw materials of evolution because they
- A. contribute to new variations in organisms
 - B. are usually related to the environment in which they appear
 - C. are usually beneficial to the organism in which they appear
 - D. usually cause species of organisms to become extinct
120. What would most likely result if mitosis was not accompanied by cytoplasmic division?
- A. two cells, each with one nucleus
 - B. two cells, each without a nucleus
 - C. one cell with two identical nuclei
 - D. one cell without a nucleus
121. In which group would there be the greatest similarity between members in terms of structure and function?
- A. species
 - B. genus
 - C. kingdom
 - D. phylum
122. The process of meiotic cell division in a human male usually forms
- A. one diploid cell, only
 - B. four diploid cells
 - C. one monoploid cell, only
 - D. four monoploid cells
123. Many unicellular organisms reproduce by the process of
- A. fission
 - B. regeneration
 - C. ovulation
 - D. nondisjunction

124. In which part of a flower do both meiosis and fertilization occur?
- A. ovule
 - B. stigma
 - C. anther
 - D. petal
125. Based on the fact that a watermelon contains many seeds, what can be inferred about a normal flower of a watermelon plant?
- A. It contains many sepals and petals.
 - B. It contains very large anthers.
 - C. It contains a large number of ovules.
 - D. It contains a large number of stamens.
126. The number of autosomes and type of sex chromosome normally present in a human egg cell is
- A. 44 + XY
 - B. 44 + XX
 - C. 22 + Y
 - D. 22 + X
127. A pollen grain does not normally germinate until
- A. a zygote is formed
 - B. cleavage has occurred
 - C. pollination has occurred
 - D. us is formed
128. What does the process of photosynthesis produce?
- A. starch, which is metabolized into less complex molecules by dehydration synthesis
 - B. protein, which is metabolized into less complex molecules by dehydration synthesis
 - C. glycerol, which is metabolized into more complex carbohydrates by dehydration synthesis
 - D. glucose, which is metabolized into more complex carbohydrates by dehydration synthesis
129. Which statement best explains why invertebrates regenerate lost tissue more readily than most vertebrates do?
- A. Invertebrates contain specialized cells that produce the hormones necessary for this process.
 - B. Invertebrate cells exhibit a higher degree of uncontrolled cell division than vertebrate cells do.
 - C. Invertebrate animals reproduce asexually, but vertebrate animals reproduce sexually.
 - D. Invertebrate animals have more undifferentiated cells than vertebrate animals have.

130. In humans, which substance is produced anaerobically during strenuous activity?
- A. lactic acid
 - B. glycogen
 - C. carbon dioxide
 - D. alcohol
131. Which process provides most of the oxygen found in Earth's atmosphere?
- A. photosynthesis
 - B. aerobic respiration
 - C. dehydration synthesis
 - D. fermentation
132. In animals, which occurs during the synthesis of larger, more complex organic molecules from smaller organic molecules?
- A. Water is released.
 - B. Oxygen is released.
 - C. Nitrogen is absorbed.
 - D. Phosphorus is absorbed.
133. A compound that is synthesized by both humans and geranium plants is
- A. cellulose
 - B. ATP
 - C. ethyl alcohol
 - D. chlorophyll
134. Many bacteria that enter the circulatory system are engulfed and destroyed by
- A. phagocytic white blood cells
 - B. pinocytic red blood cells
 - C. plasma
 - D. platelets
135. In the process of photosynthesis, chlorophyll serves as
- A. an end-product
 - B. a raw material
 - C. an energy converter
 - D. a hydrogen acceptor
136. Which is a biotic factor operating within an ecosystem?
- A. the type of climate in a given region
 - B. the carnivores that consume other animals
 - C. the amount of helium gas in the air
 - D. the rate of flow of water in a river

137. A certain plant requires moisture, oxygen, carbon dioxide, light, and minerals in order to survive. This statement shows that a living organism depends on
- biotic factors
 - abiotic factors
 - symbiotic relationships
 - carnivore-herbivore relationships
138. All of Earth's water, land, and atmosphere within which life exists is known as
- a population
 - a community
 - a biome
 - the biosphere
139. An ecosystem, such as an aquarium, is self-sustaining if it involves the interaction between organisms, a flow of energy, and the presence of
- equal numbers of plants and animals
 - more animals than plants
 - materials cycles
 - pioneer organisms
140. A scorpion stalks, kills, and then eats a spider. Based on its behavior, which ecological terms describe the scorpion?
- producer, herbivore, decomposer
 - producer, carnivore, heterotroph
 - predator, carnivore, consumer
 - predator, autotroph, herbivore

141. Which statement best describes some organisms in the food web shown below?



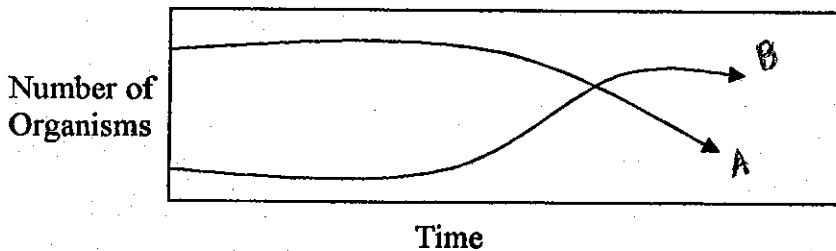
- Minnows and fish are primary consumers.
 - Algae and floating plants are producers.
 - Aquatic crustaceans are omnivores.
 - Raccoons, fish, and ducks are secondary consumers.
142. Base your answer on the diagram above and on your knowledge of biology. The diagram illustrates the relationships between the organisms in a certain pond. In addition to sunlight, another factor needed to make this a self-sustaining ecosystem would be the presence of

- A. producers
- B. primary consumers
- C. decomposers
- D. higher order consumers

143. Base your answer on the diagram above and on your knowledge of biology. The diagram illustrates the relationships between the organisms in a certain pond. In this pond community, which organisms are secondary consumers?

- A. aquatic crustaceans and raccoons
- B. carnivorous fish and aquatic crustaceans
- C. ducks and minnows
- D. ducks and carnivorous fish

144. The graph below shows that changes in two populations of herbivores in a grassy field. One possible reason for these changes is that



- A. all of the plant populations in this habitat decreased.
- B. population B competed more successfully for food than population A did.
- C. population A produced more offspring than population B did.
- D. population A consumed the members of population B.

145. Certain bacteria living in a human's large intestine help to produce vitamin K. This relationship is an example of

- A. animal parasitism
- B. plant parasitism
- C. commensalism
- D. mutualism

146. Which organisms are dependent upon other animals for food?

- A. producers
- B. herbivores
- C. scavengers
- D. primary consumers

147. A rocky island appears as oceanic waters recede. Which of the following forms of vegetation would probably appear first on the bare rocks?

- A. lichens
- B. weeds
- C. shrubs
- D. pioneer trees

148. All the plants, animals, and protists living in a forest make up a
- A. population
 - B. community
 - C. species
 - D. phylum
149. The creation of wildlife refuges and the enforcement of game laws are conservation measures that promote increased
- A. use of biocides
 - B. preservation of species
 - C. use of biological controls
 - D. exploitation of species
150. An example of a biological control against insects is the use of
- A. herbicides
 - B. wildlife refuges
 - C. pesticides
 - D. sex hormones