10/29/2016 Houston ISD
Science I Contest

CONTESTANT NUMBER _____

Contest General Directions

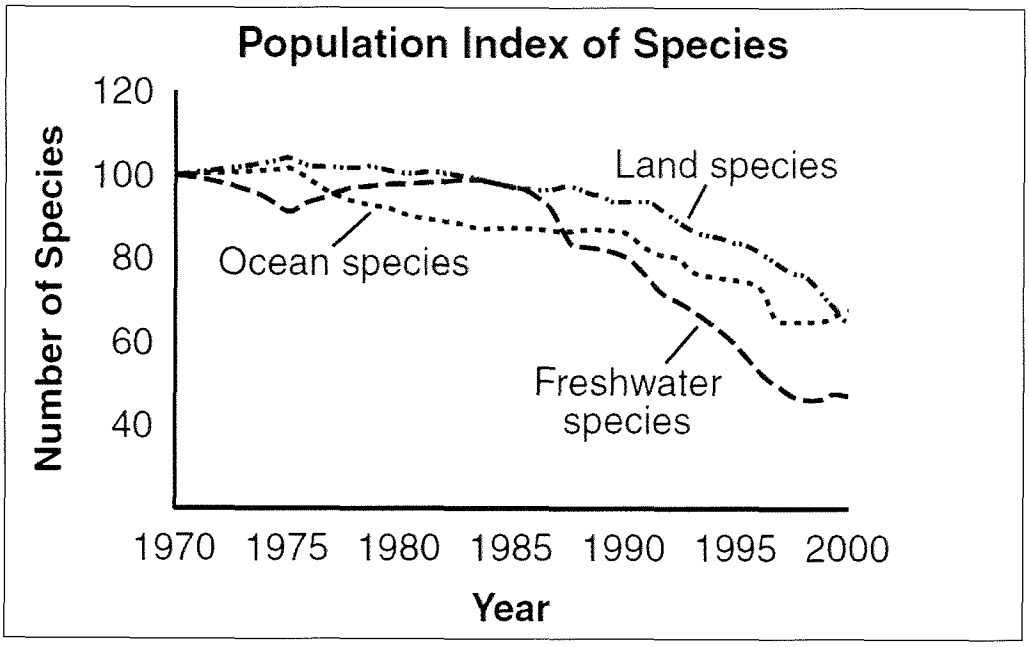
1. DO NOT open this test until told to do so.
2. You may be given up to 45 minutes to take this test.
3. There are 35 problems on the test.
4. Problems that are skipped are not considered wrong.
5. All answers must be written in the answer blanks on the answer sheet. If a scantron/chatsworth answer card is provided all answers must be recorded (bubbled in) on the card. You may write anywhere on the test, but only answers are allowed on the answers sheet or answer card.
6. If an answer is changed be sure to erase the answer thoroughly before entering in a new answer.
7. All problems have at least one best answer.
8. Use CAPITAL LETTERS if writing answers on an answer sheet.
9. Each correct answer receives +5 points and each wrong answer receives –2 points.

10/29/2016 Houston ISD Science Exam I

(1) Two organisms that are in the same order will also be in the same
A) genus.
B) family.
C) species.
D) class.

(2) Photosynthesis is a chemical reaction that occurs inside green plant cells. Which sentence describes one important energy conversion that occurs as a result of photosynthesis?
A) Light is converted to chemical energy.
B) Oxygen is converted to chemical energy.
C) Carbon dioxide is converted to light energy.
D) Chlorophyll is converted to light energy.

(3) In 1970, scientists selected 100 species from each of three environments—ocean, land, and freshwater. The graph below shows how many of these species still existed in the year 2000. Which statement below best describes the trend represented by the data?



A) The ocean species increased in number.
B) There were more ocean species than land species.
C) The populations within each freshwater species decreased.
D) The numbers of land, freshwater, and ocean species all decreased.

(4) Which energy source might involve burning wood or producing gasohol?
A) wind turbine
B) hydroelectric power
C) biomass
D) nuclear fission

(5) Which of the following statements is a scientific hypothesis?
A) Flossing has proven to be an effective method of improving oral health.
B) Many infectious diseases, such as gum disease, are caused by microorganisms.
C) In general, any method that reduces bacteria in the mouth will improve oral health.
D) An individual who flosses daily will be less likely to get gum disease than one who flosses weekly.

(6) What process makes food for plants?
A) Reproduction
B) Respiration
C) Photosynthesis
D) Condensation

(7) A coal-burning facility is constructed in an area containing several pond ecosystems. How will this human activity most likely affect the pond ecosystems?

A) More nutrients will be available.
B) Disease will become less common.
C) Organism diversity will increase.
D) Water quality will be reduced.

(8) Which characteristic is used to classify frogs into a different phylum from squid, snails, and jellyfish?

A) Frogs are predators.
B) Frogs have backbones.
C) Frogs breathe oxygen.
D) Frogs live on land.

(9) Black bears roam over large territories. What effect would be building shopping centers in these territories have on the bears?

A) Promote an increase in black bear reproduction
B) Introduce a new bear population to the area
C) Stabilize the black bear population
D) Reduce the black bears' habitat

(10) According to this equation, $C + O_2 \longrightarrow CO_2$, what happened to the carbon and oxygen?

A) They combined chemically to form a new compound.
B) They combined chemically to form carbon and oxygen.
C) They combined physically to form a new element.
D) They combined physically to form a new mixture.

(11) The data table below and to the right shows the results of an investigation. What information should be used for the column headings marked **X**?

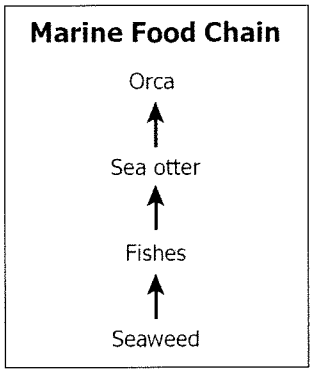
A) Trial number
B) Number of seeds
C) Predicted value for the results
D) Average of the data in each column

Effect of Soil Temperature on the Germination Rate of Pumpkin Seeds

Soil Temperature (°C)	Germination Rate (%)			Average Germination Rate (%)
	X	X	X	
20	60	64	70	65
24	75	78	82	78
28	86	84	83	84
32	69	65	63	66

(12) What is the role of the Orca in this food chain to the right?

A) Producer
B) First-order consumer
C) Second-order consumer
D) Third-order consumer



(13) The best scientific reason for a scientist to accept a specific theory is —

A) that research and observations support the theory.
B) because there can only be one correct theory.
C) to gain recognition as a great scientist.
D) to obtain funding for the research.

(14) There are harvesting regulations for many fish species that limit the number and size of the fish that may be kept. What is the most likely reason these limits have been placed on harvesting these fish?

A) To have people spend more money on fishing
B) To keep other game fish species populations low
C) To keep a healthy population of adult fish
D) To have enough fish for zoo aquariums

(15) It is important to protect air quality because —

A) storms worsen as air pollution decreases.
B) wind currents change when the air is polluted.
C) acid rain is caused by air pollution.
D) energy produced by the Sun decreases when air is polluted.

(16) The quality of pond water can be determined by identifying the number and types of organisms found living in the water. Which piece of equipment will best help students identify some of these organisms?

A) Microscope
B) Binoculars
C) pH paper
D) Pan balance

(17) A student makes a drawing of a carbon atom. Which of these should the student show in the nucleus of the atom?

A) Ions
B) Protons
C) Electrons
D) Molecules

(18) For separate ecosystems to be classified as the same type of biome, they must —

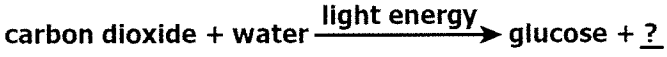
A) be at least one hundred square meters in area.
B) be located along the equator.
C) have deciduous forests.
D) have similar organisms and climates.

(19) Clouds are formed when millions of drops of water become suspended in the air. Which of the following is a step in the process of cloud formation?

A) Expansion of cold air
B) Condensation of water vapor
C) Formation of carbon dioxide
D) Breakdown of atmospheric ozone

(20) The equation for photosynthesis is shown down below. Which of these is required to complete the equation for photosynthesis?

PHOTOSYNTHESIS



A) Carbon
B) Nitrogen
C) Oxygen
D) Hydrogen

(21) Cancer is most often the result of

A) biological adaptation.
B) natural selection.
C) abnormal cell division.
D) biological adaptation.

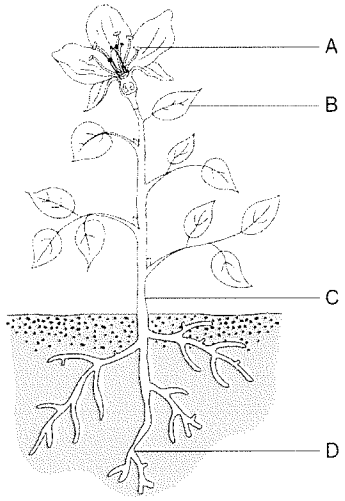
(22) Some one-celled organisms can reproduce by the process of

A) hormone secretion.
B) metamorphosis.
C) fertilization.
D) cell division.

(23) Which structure is found in a plant cell but not in an animal cell?

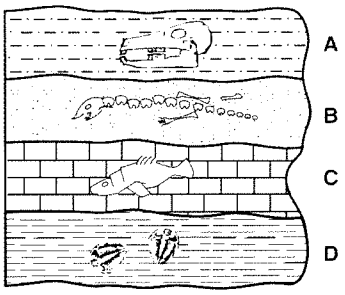
A) cell wall
B) cell membrane
C) cytoplasm
D) nucleus

(24) Based on the diagram of a green plant below and to the right, which part of the plant is directly involved in sexual reproduction?



A) A
B) B
C) C
D) D

(25) The diagram to the right shows a cross section of a portion of Earth's crust that has not been overturned. Letters *A*, *B*, *C*, and *D* represent sedimentary rock layers that contain fossils. Which rock layer contains the the oldest fossils?



(Not drawn to scale)

A) A
B) B
C) C
D) D

(26) On which date does North America usually experience the longest period of daylight?

A) March 21
B) June 21
C) September 21
D) December 21

(27) Earth's hydrosphere is best described as the

A) relatively thin layer of rock found above Earth's mantle.
B) relatively thin layer of water covering most of Earth's crust.
C) hot liquid rock located in Earth's outer core.
D) very dense rock located in Earth's inner core.

(28) A student is trying to dissolve 20 grams of sugar in a beaker containing 250 milliliters of water at room temperature. What can the student do to make the sugar dissolve faster in the water?

A) decrease the temperature of the water
B) stir rapidly
C) use larger pieces of sugar
D) use less water

(29) The elements fluorine, chlorine, bromine, and iodine are all found in the same group on the periodic table. These elements are grouped together because they

A) are metals.
B) react in similar ways.
C) have the same atomic mass.
D) are noble gases.

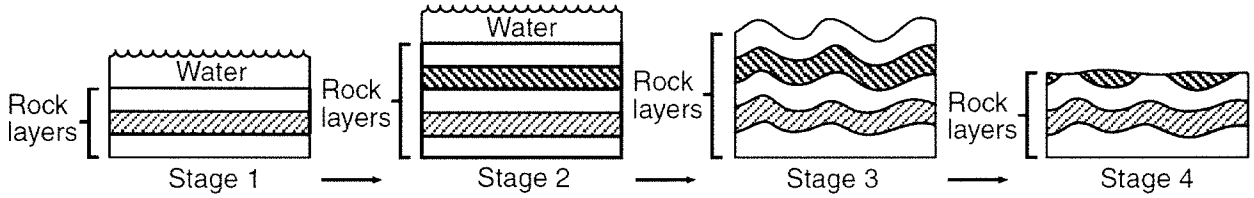
(30) Movement of Earth's crust along plate boundaries produces

A) fronts.
B) tides.
C) hurricanes.
D) earthquakes.

(31) Hydrochloric acid is added to a beaker containing a piece of zinc. As a result, zinc chloride is formed and hydrogen gas is released. This is an example of

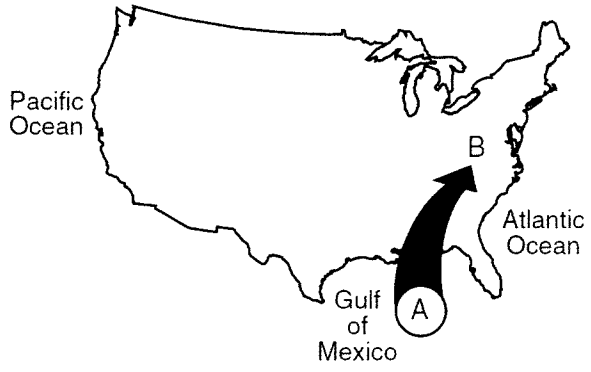
A) a chemical reaction.
B) evaporation.
C) photosynthesis.
D) a physical change.

(32) The diagram below shows stages in the development of a certain landscape. When did erosion become the most dominant process in the development of the landscape shown in stage 4?



A) at stage 1
B) at stage 2
C) between stages 2 and 3
D) between stages 3 and 4

(33) The map below shows an air mass that formed over the Gulf of Mexico at location *A*. Once air mass *A* reaches location *B*, the weather conditions at location *B* will most likely become



A) warmer and drier.
B) warmer and more humid.
C) colder and more humid.
D) colder and drier.

(34) Some kinds of fish live most of their lives in salt water but lay their eggs in freshwater. Their ability to survive in different environments is an example of

A) adaptation.
B) a habit.
C) developmental stages.
D) selective breeding.

(35) Which example would result in new cells that are most different from the parent cells?

A) yeast cells splitting into new cells
B) bacteria cells dividing into new cells
C) skin cells dividing to produce more skin cells
D) sperm and egg cells uniting to produce fertilized egg cells

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Answer Key

(1) ____C____
(2) ____A____
(3) ____D____
(4) ____C____
(5) ____D____
(6) ____C____
(7) ____D____
(8) ____B____
(9) ____D____
(10) ____A____
(11) ____A____
(12) ____D____
(13) ____A____
(14) ____C____
(15) ____C____
(16) ____A____
(17) ____B____
(18) ____D____
(19) ____B____
(20) ____C____

(21) ____C____
(22) ____D____
(23) ____A____
(24) ____A____
(25) ____D____
(26) ____B____
(27) ____B____
(28) ____B____
(29) ____B____
(30) ____D____
(31) ____A____
(32) ____D____
(33) ____B____
(34) ____A____
(35) ____D____

For Graders Use Only

Initials _____ _____ _____

_____ Correct × (+5) = _____

_____ Wrong × (−2) = _____

Total Score = _____

Rank _____