UIL A+ Science Update

Starting in the 2021-22 school year, Science has moved to one test for students in grades 6-8.

The following tests are from last year when the test was split into Science I and Science II.

The new Science test will include similar types of questions and will cover current state-adopted curriculum and textbooks with approximately 15 questions for each grade level (6, 7, and 8) and five wild card or general questions on the test.

Below are sample questions and a key for the updated Science event.

2021-2022 A+ SCIENCE
SAMPLE QUESTIONS

1. Within any group of elements on the periodic table the metallic character tends to do which of the following from bottom to top in the group?

A. Increase B. Decrease C. Remains constant

2. A tennis ball is dropped from a step stool one meter high. At which position does the tennis ball have the greatest potential energy and least kinetic energy?
   A. At 0 meter high
   B. At .25 meter high
   C. At .5 meter high
   D. At .75 meter high

3. A car travels 35 kilometers in 30 minutes. What is the average speed of this car?
   A. .86 km/hr
   B. 1.17 km/hr
   C. 70 km/hr
   D. 700 km/hr

4. A class was studying human body systems. Composed of a number of small organs distributed throughout the body, this system coordinates the metabolic activity of body cells by interacting with the nervous system. The class was studying which of the following systems?
   A. Endocrine system
   B. Immune system
   C. Circulatory system
   D. Muscular system

5. According to cell theory, what do each of the following organisms have in common?

A. They can all reproduce by spontaneous generation.
B. Each organism is able to photosynthesize.
C. Cells are the basic unit of structure for each organism.
D. They are all made up of the same exact atoms.

6. In recent years, there have been numerous agencies planning manned trips to Mars. Why is traveling to Mars so difficult?
   A. Temperatures in space
   B. Distance between planets
   C. No landing runway on Mars
   D. Erratic motion of planets

7. Speed is a scalar type of measurement and velocity is a vector type measurement. What is the main difference between scalar and vector measurements?
   A. Scalar measurements include a direction
   A. Vector measurements include a direction
   B. Neither scalar nor vector measurements include a direction
   C. Both scalar and vector measurements include a direction

8. A force acts on a soccer ball for four seconds causing it to accelerate. If the ball is replaced with a similar ball with four times the mass and the same force is applied for the same amount of time, the acceleration of the similar ball will now be –

   A. One fourth the value
   B. One half the value
   C. Twice the value
   D. Four times the value

9. Which of the following best supports the Big Bang Theory?
   A. Various shapes of galaxies
   B. Speed of light
   C. Red & blue shifts of light from stars
   D. The motion of planets in orbit

10. What does this symbol indicate about a substance?
   A. Can cause injury to skin
   B. Can burn easily
   C. Hazardous to the environment
   D. Harmful to inhale

SAMPLE QUESTIONS
KEY

1. B
2. D
3. C
4. A
5. C
6. A
7. B
8. A
9. C
10. B

CONTESTANT NUMBER:

FOR GRADER USE ONLY Score Test Below: _____ Initials_____ _____ Initials_____ **Papers contending to place:** _____ Initials_____	**University Interscholastic League** **A+ Science Contest • Answer Sheet**

Write your contestant number in the upper right corner, and circle your level below.

Circle Level: Science I Science II

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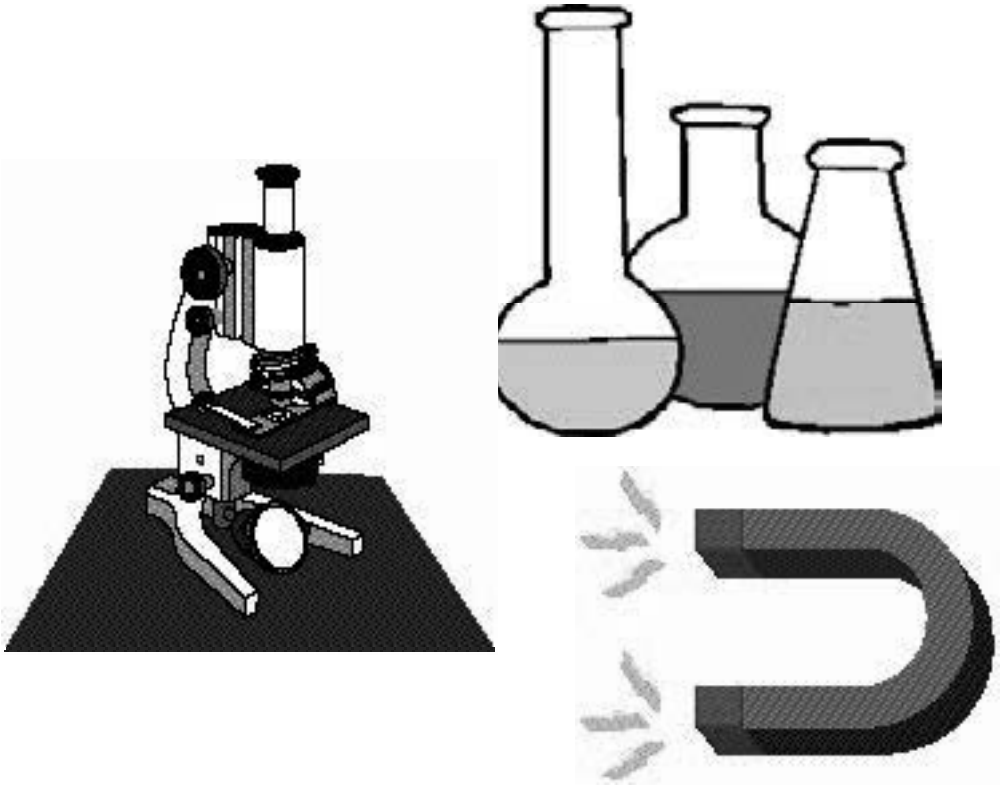
INVITATIONAL 2020-2021

A+ ACADEMICS

University Interscholastic League



Science I

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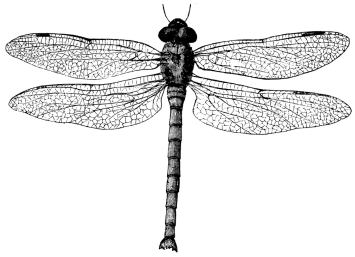
UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE I
INVITATIONAL TEST

1. Using the following information identify the insect.



1. Does the insect have wings? Remember most adult insects have 2 pairs of wings, but they're not always visible.	a. Yes	go to step 2
	b. No	Order Hemiptera
2. Does the insect have parallel wings?	a. Yes	go to step 3
	b. No	go to step 4
3. Does the insect have a parallel line down the back that divides the wings?	a. Yes	Order Coleoptera
	b. No	Order Orthoptera
4. Does the insect have 4 total wings?	a. Yes	go to step 5
	b. No	Order Diptera
5. Does the insect have long antennae?	a. Yes	go to step 6
	b. No	Order Odonata
6. Does the insect have a small body with large fan –shaped wings?	a. Yes	Order Lepidoptera
	b. No	Order Hymenoptera

A. Order Hemiptera
B. Order Coleoptera
C. Order Diptera
D. Order Odonata

2. Which of these converts radiant energy to chemical energy?
   A. Flashlight bulb
   B. TV screen
   C. Tree leaf
   D. Campfire

3. In a student led experiment, 4 worms were place at each end of a compartmented container based on specific temperature ranges. After 10 minutes, all of the worms were congregated in the center compartment. The students concluded that the organisms had moved as far as they could during the time period. Which other explanation is best supported?
   A. Worms need to be with other worms for warmth
   B. Worms moved to the preferred temperature range
   C. Worms randomly move until they locate other worms
   D. Worms moved until they ran out of energy and remain stationary

4.

Species

Species A

The illustration shows the relationship of two species living in a grassland biome. What can be concluded about the location of the two species in a food web?
   A. Species A and B occupy the same level of the food web.
   B. Species A is located on a higher level of the food web.
   C. It would be inappropriate for species A and B to be placed in the same food web.
   D. Species B is located on a higher level of the food web.

5. Which organ is responsible for most of the chemical digestion in the human body?
   A. mouth
   B. stomach
   C. small intestine
   D. large intestine

6. Reptiles do not have the ability to create their own heat. They must lay in the sun for prolonged periods of time to regulate their body temperature. Mammals have the ability to create their own heat. Where do mammals get the energy for this heat?
   A. The oxygen they inhale
   B. From light the animals absorb
   C. From radiation in the body
   D. From food the animals eat

7. Researchers on the ISS studying plant growth would probably see that the plants do not grow in the same manner and direction as those on Earth do. Researchers working in space would most likely be studying which of the following effects?
   A. Friction
   B. Gravity
   C. Convection currents
   D. Humidity

8. A landslide is the movement of rock, earth, or debris down a sloped section of land. Landslides can be caused by rain, earthquakes, or volcanic activity that make the slope unstable. If all of the plants in the valley are buried from a landslide. New plants that begin to grow in the valley after the landslide will mostly likely not have access to which of the following —
   A. Fresh air
   B. Ample sunlight
   C. Fertile soil
   D. Water

9. Over time, erosion can greatly affect a coastal environment. Which of the following is a direct result of erosion on coastal environments?
   A. Coastal land areas increase
   B. Due to wave action on beaches, rocks are lost
   C. Competition for resources increases due to lost habitats
   D. Increase of concrete production

10. A natural spring of water starts a river flowing in Texas. The spring water flows up into an area that is used as a recreational swimming pool, and then flows into a river downstream. A determined amount of water consistently flows out of the spring every day. Which of the following statements is true about the spring and the river?
   A. The water from the spring is ground water that enters the surface water of the river.
   B. The water from the river and spring are both examples of surface water.
   C. The water from the river and spring are both examples of ground water.
   D. The water from the spring and river are considered run-off.

11. Which of the following characteristics essential to the existence of life here on Earth?

1. Earth's acceleration due to gravity is 9.8 m/s^2 2. Earth's atmosphere is composed of mostly nitrogen with oxygen and carbon dioxide. 3. Almost 99% of the minerals making up the Earth's crust are made up of just eight elements. 4. Temperatures range from -25 degrees Celsius to 45 degrees Celsius. 5. Earth's magnetic field serves to deflect most of the solar wind.

   A. Characteristics 2 and 4
   B. Characteristics 1, 2, and 4
   C. Characteristics 1 and 3
   D. Characteristics 2, 4, and 5

12. A student hypothesized that algae will grow the most if they are exposed to light that has a wavelength of 495 nm. To test this hypothesis, the student should design an experiment with which of the following as the independent variable?
   A. Color of the algae
   B. Rate of growth of the algae
   C. Wavelength of light that algae are exposed to
   D. Time of exposure to light

13. After a space craft has launched into orbit which of the following statements would be most accurate?
    A. Once in orbit, the space craft has escaped earth's gravity it no longer requires an upward force from rockets.
    B. During launch, the rocket must apply Newton's Laws of motion, but once in orbit these laws no longer apply.
    C. The craft in orbit must have artificial lighting systems since that they are in space and will no longer receive sunlight.
    D. During launch the craft moves vertically, once in orbit it only moves horizontally.

14. A good adaptation for vegetation living in a rainforest would be —
    A. Front legs and paws that allow animals to burrow into the ground
    B. The ability to grow very high to reach the sunlight
    C. Layers of insulating feathers or fur
    D. The ability of plants to regrow after fires

15. The more diverse an ecosystem is —
    A. the faster populations become extinct
    B. the more similar the species will be
    C. the more stable the ecosystem becomes
    D. the fewer number of species are present

16. The role of a pioneer species are the first to return after a disturbance, they are the first stage of succession, and their presence increases the diversity in a region. A species that is responsible for primary succession in an ecosystem is most likely able to —
    A. Fend off a predator
    B. Migrate
    C. Live in arid environment
    D. Produce its own food

17. The flower Black-eyed Susans have petals that appear yellow to humans, but UV markings give them a bull's eye-like design. These markings help the plants —
    A. Avoid parasites
    B. Attract pollinators
    C. Seek out moisture
    D. Create a strong scent to attract organisms

18. Many people prefer breeds of dog that have specific traits. Recently there has been a surge in selectively breeding dogs to produce specific traits. Which of the following would most likely be a favorable trait that dog breeders try to produce?
    A. Dogs with no ears
    B. Dogs that don't shed
    C. Dogs with large eyes
    D. Dogs that don't bark

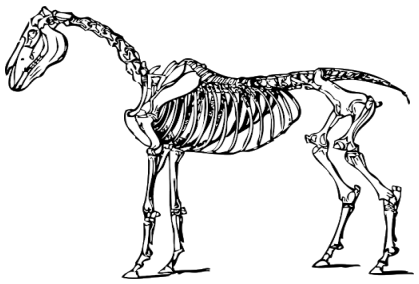
19. Complex animals use their circulatory systems to provide their cells with water and food. Plants do not have circulatory systems. What have they developed instead to move nutrients and water?
    A. Xylem & Phloem
    B. Cork Cells
    C. Thylakoids
    D. Granum

20. Which of the following is not a part of the integumentary system of the body?
    A. Hair
    B. Fingernails
    C. Skin
    D. Esophagus

21. An animal's kidneys' job is to filter your blood. They remove wastes, control the body's fluid balance, and keep the right levels of electrolytes. To which level of biological organization does the kidney belong?
    A. Cell
    B. Tissue
    C. Organ
    D. Organ system

22. Which structures perform similar functions in plant and animal cells?
    A. Mitochondria and cell membrane
    B. Vacuole and chloroplast
    C. Cell wall and nucleus
    D. Ribosome and chloroplast

23. Which type of cell has a structure that most closely resembles a similar function to that of a skeletal system in a horse?
    A. Animal cell
    B. Bacterial cell
    C. Virus
    D. Plant cell



24. Which set of materials would be most appropriate to prepare a wet mount slide containing an onion cell?
    A. Microscope slides, cover slips, alcohol, scissors, toothpicks
    B. Microscope slides, cover slips, water, forceps, scalpel
    C. Microscope slides, cover slips, salt, scalpel, probe
    D. Microscope slides, cover slips, forceps, salt water

25. According to the Cell Theory, viruses are not considered living. Which of the following would refute this previous statement concerning the Cell Theory?
    A. All living organisms have the ability to reproduce by themselves and viruses are not able to do this.
    B. All living organisms have the ability to make their own energy and viruses are not able to do this.
    C. All living organisms have the ability to move and viruses are not able to do this.
    D. All living organisms are made from cells and viruses are not made from cells.

26. An elk grazing sees a nearby cougar charging to attack and eat the elk. Which of the following is the most likely response of the elk?
    A. Stand tall and intimidate the cougar
    B. Disregard the charging cougar
    C. Flee from the cougar
    D. Attack the cougar

27. Bacteria can enter a person's body through many ways. As a result of harmful bacteria, an individual can vomit. This response helps fights infection by —
    A. Expelling the harmful bacteria from the body
    B. Killing the harmful bacteria with acids found in the stomach
    C. Creating new cells to track down and kill the harmful bacteria
    D. Keeping the harmful bacteria away from other individuals

28. In snapdragons a cross between a homozygous parent with white flowers (C^WC^W) and a homozygous parent with red flowers (C^RC^R) will produce offspring with pink flowers (C^RC^W). Using what the student has learned about genetics, there is evidence that shows the offspring has which of the following —
    A. Pure recessive
    B. Pure dominance
    C. Incomplete Dominance
    D. Codominance

29. A cat breeder was surprised when a white cat was born in a litter of brown cats. They researched to discover that white cat fur can result from a mutation. A mutation means that —
    A. The genetic information didn't copy correctly
    B. The mother did not get enough nutrition
    C. The white cat belonged to another litter
    D. The white cat had its paternal genes only

30. A student is creating a family tree for a class project. While doing his research, he gathered pictures of all his cousins. From the pictures, he noticed that his cousins in the pictures all looked similar. What is the most likely reason for this resemblance?
    A. They have similar cell types.
    B. They have similar DNA.
    C. They have similar chloroplasts.
    D. They have similar ribosomes.

31. A scientist develops a hypothesis, designs and conducts an experiment, and obtains data that supports the hypothesis. Which of the following best describes when a hypothesis becomes a theory?
    A. If one good set of data is collected
    B. If the scientific method is followed correctly
    C. Data is communicated to others
    D. Data is supported by consistent data from numerous trials

32. Which of the following is the highest temperature?
    A. 38°C B. 96°F C. 300 K

33. Which of these instruments will measure 77.5 ml the most precisely?
    A. A 200 ml flask, graduated in 2 ml increments
    B. A test tube with no markings on it
    C. A 100 ml beaker graduated in 10 ml increments
    D. A 100 ml cylinder graduated in 1 ml increments

34. Which best describes the following graphic?

A. Qualitative data
B. Inference
C. Quantitative data
D. Hypothesis

35. A student measures a piece of glass tubing that is 35.35 cm long. His measurements were 37.25 cm, 37.32 cm, 37.15cm and 37.20 cm. Which of the following statements is true?
    A. the measurements were accurate but not precise
    B. the measurements were precise but not accurate
    C. the measurements were both precise and accurate
    D. the measurements were neither precise not accurate

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020-2021 SCIENCE I
INVITATIONAL TEST

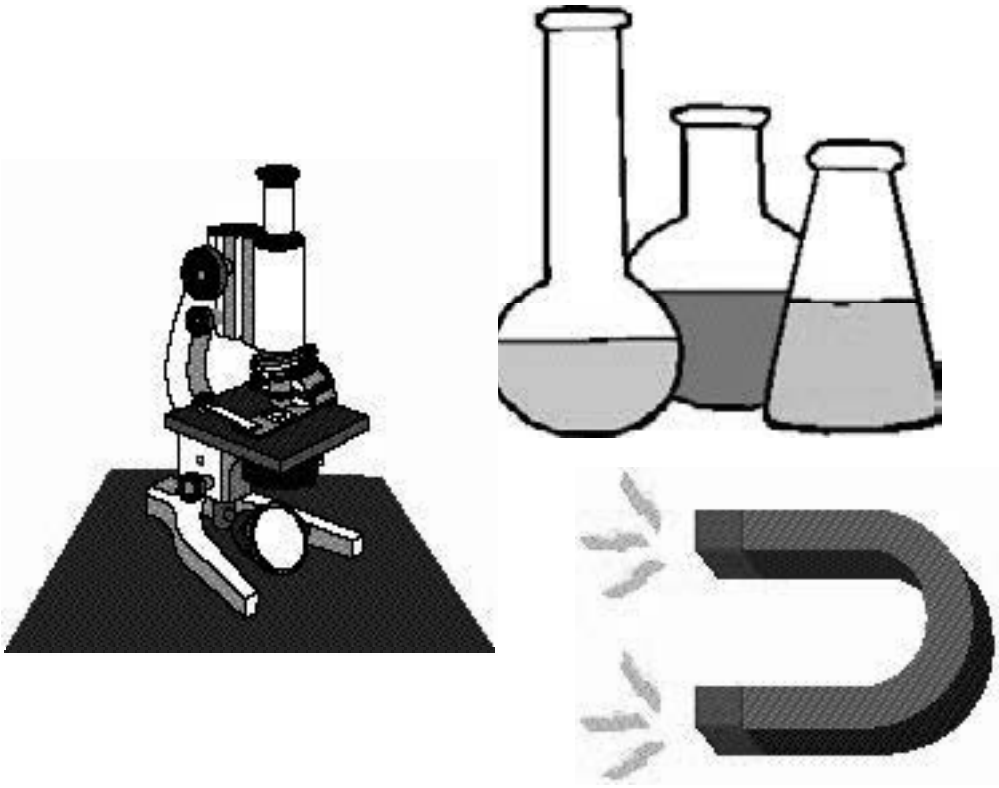
Answer Key

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

INVITATIONAL 2020-2021

A+ ACADEMICS

University Interscholastic League



Science II

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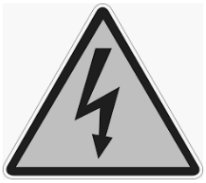
UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE II
INVITATIONAL TEST

1. You should see this safety symbol when you need to take precaution when inhaling.

A. 

C. 

B. 

D. 

2. A student is studying strontium, a highly reactive element that humans need for strong bones. Which characteristic of strontium is most closely related to its chemical reactivity?
   A. The 38 protons in each atom
   B. The density is 2.45 g/cm^3
   C. The atomic mass is 87.62 amu
   D. The 2 valence electrons in each atom

3. How many kilograms are there in 6.5 pounds? (2.2 lbs = 1 kg)
   A. 14.3 kg
   B. 6.5 kg
   C. 2.95 kg
   D. .34 kg

4. A certain atom consists of 12 protons, 11 neutrons, and a number of electrons. Which information will be most useful in determining the identity of the atom?
   A. The number of nucleons
   B. The number of protons
   C. The number of electrons
   D. The number of valence electrons

5. Which of the following is the highest temperature?
   A. 38^{o}C
   B. 96^{o}F
   C. 300 K

6. Which property of an element would be most useful in determining the column it belongs in the periodic table?
   A. The boiling point
   B. The brittleness
   C. The color of it
   D. The chemical reactivity

7. The chemical formula for sodium sulfate is Na_2SO_4. How many sodium atoms are in the formula for sodium sulfate?
   A. 1
   B. 2
   C. 6
   D. 7

8. A student mixes two solutions, planning to produce carbon dioxide. Which of the following is the evidences best illustrates that a chemical reaction has produced CO_2 gas?
   A. A change in color
   B. Formation of a precipitate
   C. Bubble formation
   D. Change in temperature

9. Four students' carts filled with food across the parking lot. Each student pushes with the same amount of force. Which cart has the greatest change in speed?
   A. A cart with a 10 kg mass
   B. A cart with a 5 kg mass
   C. A cart with a 7 kg mass
   D. A cart with a 15 kg mass

10. A team in Dallas travels south to San Antonio to participate in a tournament. The trip from Dallas to San Antonio is about 440 kilometers. The trip requires about 4 hours to complete on a bus. Which of the following best represents the velocity of the bus?
    A. 110 km/h
    B. 110 km/h South
    C. 1760 km/h
    D. 1760 km/h South

11. Andrew gathered a car, an incline plane, a stopwatch, a meter stick and a several weights. What is most likely being testing?
    A. How the angle of a ramp affects the speed of the car
    B. How friction affects the speed of the car
    C. How forces work on the placement of the car and the ramp
    D. How mass affects the speed of the car

12. The friction due to air acting on a softball causes it to curve as it is pitched to home plate. This is a result of which of the following:
    A. Newton's 1st law
    B. Newton's 2nd law
    C. Newton's 3rd law
    D. Universal Law of Gravitation

13. Which of the following situation would allow for every location on Earth would have 12 hours of daylight and 12 hours of darkness per day?
    A. Earth orbiting the sun in at a faster period each year
    B. Earth orbiting the sun in a perfect circle
    C. Earth is not tilted on its current axis
    D. Earth having multiple natural satellites

14. A parent explains how the moon shines to a small child by comparing it to an object that the child uses. Which statement below is the best explanation?

A. The moon is like a flashlight. It produces its own light.
B. The moon is like a mirror. It reflects light.
C. The moon is like a glow stick. It produces its own light.
D. The moon is like a toaster. When it gets hot enough it glows.

15. Which moon phase is associated with the highest tides?
A. Three quarter
B. First quarter
C. New

16. A student was measuring a small amount of liquid during an experiment. What unit will she most likely use to record the data found in the experiment?
A. Kilograms
B. Mass
C. Milliliter
D. Volume

17. The mass of a star helps determine which of the following —
A. The length of its lifecycle.
B. The position of the star.
C. The galaxy it is located in.
D. The color of the star.

18. Why does Earth get more energy from the sun as compared to all the other stars in the universe combined?
A. The sun is much bigger than all the other stars.
B. The sun is much hotter than all the other stars.
C. The sun is denser than all the other stars.
D. The sun is closer compared to the other stars.

19. Which of the following waves would be the most concerning to a human due to the wave's amount of energy and penetrating ability?
A. Gamma Rays
B. Visible light
C. Infrared
D. Radio waves

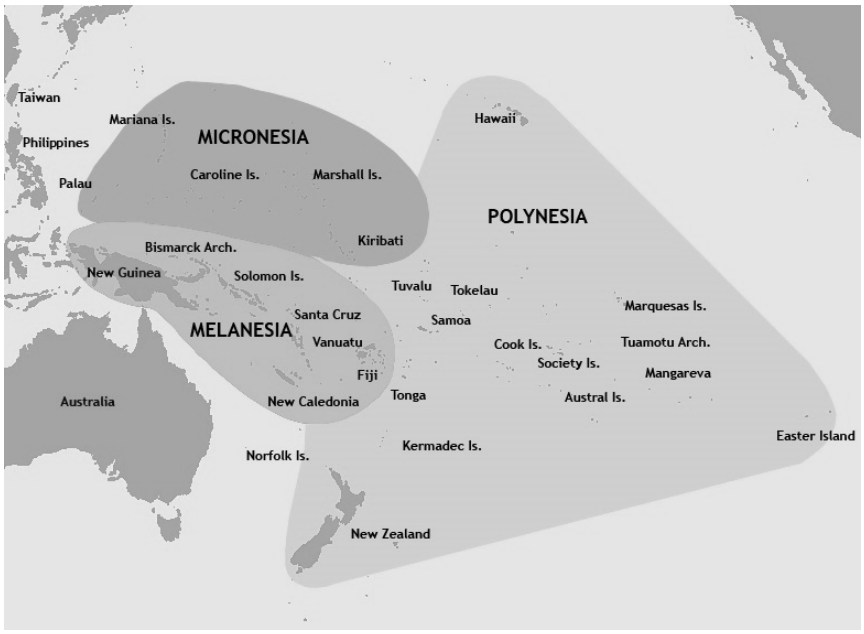
20. Copernicus was the first to suggest which of the following concerning planetary motion —
A. The universe has no center.
B. The Earth was not at the center of the solar system.
C. The Earth is at the center of the solar system.
D. The sun is at the center of the universe.

21. A science class made a model of a riverbed using a pool and damp sand. They "walked" a class pet through the sand, leaving behind footprints. Which processes were the students' most likely modeling?
A. Formation of oil
B. Creation of fossils
C. Extinction of animals
D. Formation of a river

22. South America and Africa looked like they fit together similar to a puzzle. Which individual theorized this?
    A. Einstein
    B. Hubble
    C. Wegener
    D. Hess

23. Islands located in the Pacific Ocean form because of which of the following?

    A. As the sea floor spreads apart, sediments gather due to ocean currents.
    B. The water pressure causes magma to rise to the surface.
    C. The atmospheric pressure.
    D. The sea floor is spreading apart and magma is pushing to the surface.



24. What does a blue dashed line on the topographic map most likely represent?
    A. Hiking trail
    B. River
    C. Different rock type
    D. Change in vegetation

25. When watching the weather map online, there are often "L" shown on the maps, as seen below. The "L" represents an area of low atmospheric pressure.

    Which of the following is most likely occurring in the atmosphere in the area located at the "L"?
    A. Air is sinking at this location causing skies that are clear.
    B. Air is sinking at this location causing skies that are cloudy.
    C. Air is rising at this location causing skies that are clear.
    D. Air is rising at this location causing skies that are cloudy.

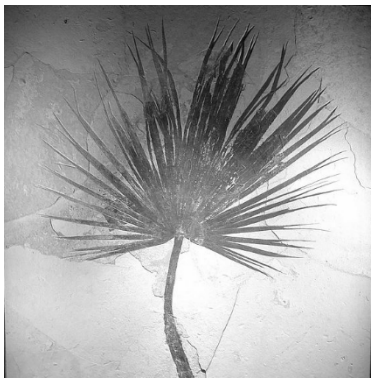
26. A student uses a beaker, graduated cylinder, and a ruler to make measurements during a laboratory experiment. What was the student most likely measuring with these tools?
    A. Mass
    B. Density
    C. Volume
    D. Temperature

27. A student created a model of convection in the ocean using a glass cup, mineral water, and food coloring. The model did NOT demonstrate convection as the student had intended. The model could be improved to demonstrate convection in the oceans by adding which of the following to the design –
    A. Adding a desk lamp
    B. Adding a hot plate
    C. Additional food colors
    D. Adding a fan

28. Weather on the western edge of which of the following is most likely to be affected by an La Niña event —
    A. Africa
    B. Australia
    C. South America
    D. Spain

29. Which of the following is not an example of how biotic factors interact with abiotic factors in an ecosystem?
    A. A wolf hunting its prey.
    B. Plants removing carbon dioxide from the air and adding oxygen.
    C. Dogs causing erosion by digging holes in the ground.
    D. Reptiles sun basking.

30. Fossils of tropical organisms can be found buried in limestone rock in the North Texas region. These plants and animals are no longer found in this area. Which of the following is most likely the cause of the disappearance of these tropical organisms?
    A. Natural disasters destroyed all the tropical organisms.
    B. Tropical animals ate all the tropical plants and everything became extinct.
    C. Pollution killed off all the tropical organisms.
    D. The climate in that area is different today than when tropical organisms lived.



31. In order to determine whether a liquid is acidic or basic, which would be the best to use:
    A. Salinity test
    B. Turbidity test
    C. Dissolved oxygen test
    D. pH test

32. Many coastal regions are dependent on fishing for their local economies. Some areas have struggled because of overfishing. Which of the following would not be a recommendation of the scientists to help the local communities to reestablish the fish populations?
    A. Create an artificial reef for the fish to live
    B. Make a law to limit the amount of fish caught
    C. Introduce an invasive species to the environment
    D. Release additional fish into the environment

33. Which of the following lists contains the most appropriate equipment for the student to use to find the density of irregular object?
    A. Beaker, balance, scalpel
    B. Test tube, ruler, gloves
    C. Spectroscope, calculator, ruler
    D. Graduated cylinder, balance, calculator

34. Diagrams, photos, charts and tables are used by scientists during an experiment to do which of the following?
    A. Identify the independent and dependent variables
    B. Predict the variables
    C. Test a hypothesis
    D. Record data

35. Which field of study did Newton's research involving laws of motion and gravitation contribute the most scientific understanding?
    A. Biology
    B. Physics
    C. Chemistry
    D. Medical

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020-2021 SCIENCE II
INVITATIONAL TEST

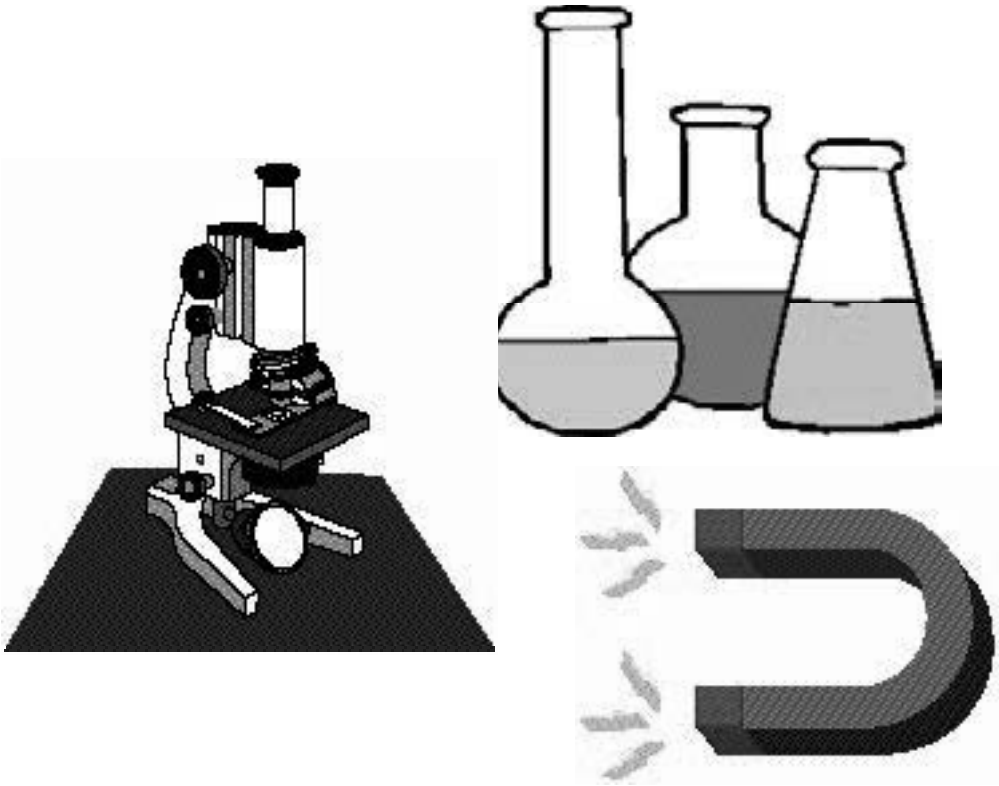
Answer Key

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

FALL/WINTER DISTRICT 2020-2021

A+ ACADEMICS

University Interscholastic League



Science I

DO NOT OPEN TEST
UNTIL TOLD TO DO SO

UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE I
FALL/WINTER TEST

1. The SDS for a chemical states that it is a highly volatile substance and is a nose and throat irritant. Which safety procedure should be followed based on the SDS information?
   A. Use substance in minute amounts
   B. Add water to the substance
   C. Use in a ventilated area, such as a fume hood
   D. Store substance in a dark colored container

2. Which statement best describes how a pond and ocean environment compare?
   A. The pond and ocean environments support the same organisms because they are both water.
   B. The pond and ocean environments support different organisms because ocean organisms cannot get over the land to get to the ponds.
   C. The pond and ocean environments support the same organisms, but they will look different because of the type of water.
   D. The pond and ocean environments support different organisms because most saltwater organisms cannot live in freshwater.

3. The lab equipment shown is being used, what task would require these specific tools?

   A. Measuring the area of the hallway
   B. Determine the speed of a rolling skate board
   C. Making an atomic model
   D. Measuring the density of an irregular solid

4. How does secondary succession help restore equilibrium in an area destroyed by a natural disaster?
   A. It increases the number and types of species.
   B. It can bring back species from extinction.
   C. It stops other natural disasters from occurring.
   D. It decreases the rate of evolution.

5. A student breaks a flask during a lab procedure. After telling the teacher, what should be done based on proper lab safety protocols?
   A. Find a new flask
   B. Tell an addition teacher
   C. Find a mop and dust pan
   D. Dispose of broken glass into proper container

6. Which of the following events would most likely cause an ecosystem to have the lowest biodiversity and population sizes five years after the original disaster?
   A. Clearing land for a parking lot
   B. A river floods a field
   C. A forest fire destroys part of a nature preserve
   D. A lava flow creates a new section of an island

7. In what part of the picture is radiant energy from the sun being converted into chemical energy?

   A. Grass
   B. Bird
   C. Worm
   D. Rock

8. Dichotomous keys are NOT based on which of the following?
   A. Physical traits
   B. Structural adaptations
   C. Observable characteristics
   D. Stimuli

9. What does this symbol indicate about a substance?
   A. Can cause injury to skin
   B. Can catch on fire easily
   C. Hazardous to the environment
   D. Harmful to inhale

10. The following seed comes from a Cottonwood tree. Based on the image which of the following is most likely the manner in which this seed is dispersed?
    A. Stick to animals' fur
    B. People planting seeds
    C. Float on water
    D. Transported by the wind

11. What do arrows represent in a food chain?
    A. The size of the organism
    B. Dominance of the organism
    C. The flow of energy
    D. What an organism eats

12. There are many different breeds of horses. Each breed was developed because of specific traits needed or desired by the breeder. One type of horse is a called a Thoroughbred, they are considered "hot-blooded" horses that are known for their agility, speed, and spirit. What kind of work would this animal be expected to do?

    A. Easy for small children to ride
    B. Carry a very heavy load
    C. Run a long distance without tiring
    D. Run very fast in races

13. Which of the following is an unsafe practice during a lab?
    A. Detecting an odor by inhaling repeatedly
    B. Watering a flower without using gloves
    C. Wearing goggles while mixing chemicals
    D. Using a stirring rod to circulate liquids

14. The first set of human teeth develop within the first two years of life. They will keep that set of teeth for a few years until they begin to become loose. They become loose and eventually fall out to make space for a new set of teeth that the person will use for the rest of their life. Based on this information, what is the function of having two different stages of teeth development in a lifetime?

    A. It allows the person time to learn brushing habits that are good before they get their permanent set of teeth.
    B. It allows the person to grow larger teeth in the second stage that they would not be able to have as a baby.
    C. It provides the person extra opportunities to have a full set of teeth in case they lost a tooth as a kid.
    D. It allows the person to try various foods when they are older.

15. An experiment was done to test the effect of ice placed on to a hot metal block. Which tool would be used to measure the transfer of energy between the hot metal block and the ice?
    A. Spring scale
    B. Balance
    C. Thermometer
    D. Spectrometer

16. A class was studying human body systems. Composed of a number of small organs distributed throughout the body, this system coordinates the metabolic activity of body cells by interacting with the nervous system. The class was studying which of the following systems?

    A. Endocrine system
    B. Immune system
    C. Circulatory system
    D. Muscular system

17. A teacher fills a sealable bag with corn syrup, colored beads, and various marbles to model a cell. One problems with this model is that is cannot show which of the following?
    A. The organelles of the cell
    B. The flexibility of the cell
    C. The nucleus of the cell
    D. The absorption of nutrients

18. Seeds are the offspring of plants. If a seed germinates and survives, it will grow to become a mature plant. Given this information, what level of organization describes a seed?
    A. Tissue
    B. Cell
    C. Organism
    D. Organ system

19. Energy stored in food is ___; as it is digested the food releases ___ energy for motion. Correctly complete this statement.
    A. Chemical; thermal
    B. Chemical; mechanical
    C. Radiant; mechanical
    D. Thermal; radiant

20. A restaurant has a large, walk-in refrigerator where food is stored for meals. Which cell organelle has a similar function to the refrigerator?
    A. Vacuole
    B. Nucleus
    C. Chloroplast
    D. Mitochondrion

21. Which of these processes does not describe a physical change in digestion?
    A. Teeth tearing food into smaller pieces
    B. Tongue shaping food as it pushes it into the esophagus
    C. Salvia in mouth breaking down starch
    D. Food being broken down by stomach muscles

22. Which situation shows an example of homeostasis in cells?
    A. A cell is attacked by a virus.
    B. A cell's nucleus sends signals throughout the cell to produce protein.
    C. A cell goes through meiosis.
    D. Water enters a cell via the cell membrane because it is dehydrated.

23. Some animals migrate across Africa in search of resources, such as grass for food. A drought would likely cause a migrating animal to:
    A. Migrate shorter distances
    B. Migrate farther distances
    C. Produce a larger herd
    D. Start eating meat as their primary food source

24. According to cell theory, what do each of the following organisms have in common?

    A. They can all reproduce by spontaneous generation.
    B. Each organism is able to photosynthesize.
    C. Cells are the basic unit of structure for each organism.
    D. They are all made up of the same exact atoms.

25. Which shows an organ applying a force?
    A. Gallbladder squeezing bile into the small intestine
    B. Eye sending signals to the brain
    C. Kidneys filtering
    D. Salvia in the mouth breaking down food

26. Hibernation is a state of inactivity and metabolic depression in endotherms. Hibernation is a characterized by low body-temperature, slow breathing and heart-rate, and low metabolic rate. What is the purpose of hibernation?

    A. To allow organisms to survive hot temperatures
    B. To allow organisms to survive when food is not available
    C. To allow organisms to get needed sleep
    D. To allow organisms to survive cold temperatures

27. Longhorn Cavern in Texas was created when limestone was carved out by running water, making its walls mostly smooth. This process best describes which of the following?
    A. Weathering B. Deposition C. Erosion

28. Which stimulus is most likely to cause an animal to respond by increasing its internal body temperature above a normal level?
    A. Over exposure to cold external temperatures
    B. Digestion of food
    C. An infection of the cells in the stomach
    D. An increased heart rate after exercising

29. The Texas Water Development Board states groundwater is used about 80% for which of the following activities?
    A. Irrigating crops
    B. Supplying residence
    C. Water supply for swimming areas

30. A child grows to be 6'1", a similar height as its parent who is 6'3". Which of the following best describes why this happens?
    A. Genetic instructions for height were passed from the parent to the child.
    B. The parent and child live together and environmental factors influenced the height.
    C. The parent and child have the same diet, causing them to reach similar heights.
    D. There is no direct link between the parent's height and the child's height.

31. Where would the greatest amount of diversity of an organism occur?
    A. In the center of a pond
    B. Next to concrete
    C. Freshly plowed field
    D. Near a stream with rocks, flowing water, & vegetation

32. In sexual reproduction, how many genes does an offspring receive for each trait?
    A. 0 C. 2
    B. 1 D. 3

33. In recent years, there have been numerous agencies planning manned trips to Mars. Why is traveling to Mars so difficult?
    A. Temperatures in space
    B. Distance between planets
    C. No landing runway on Mars
    D. Erratic motion of planets

34. A new litter of puppies was born. The puppies in the litter do not all look the same. Which part of the cell contains the information that controls the traits of these dogs?
    A. Nucleus
    B. Ribosomes
    C. Mitochondria
    D. Cell Wall

35. The End of Nature is a book written by Bill McKibben, published in 1989. It has been called the first book on global warming written for a general audience. In the book he describes nature as a force previously independent of human beings but now directly affected by the actions of people. Which of the following outcomes was MOST likely a resulting effect on society after reading this book?
    A. A rapid increase in the number of species
    B. The development of a public awareness of the impact on the environment
    C. An increase in the number of companies production
    D. Merging of the governmental agencies

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020-2021 SCIENCE I
FALL/WINTER TEST

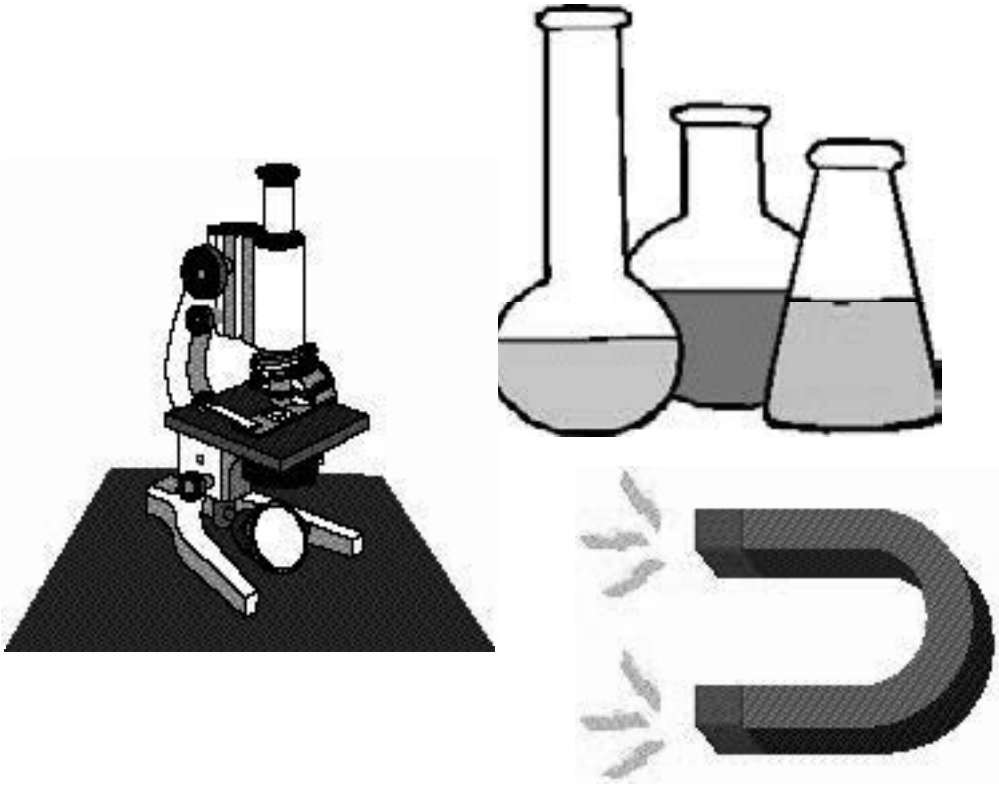
Answer Key

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

FALL/WINTER DISTRICT 2020-2021

A+ ACADEMICS

University Interscholastic League



Science II

DO NOT OPEN TEST
UNTIL TOLD TO DO SO

UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE II
FALL/WINTER TEST

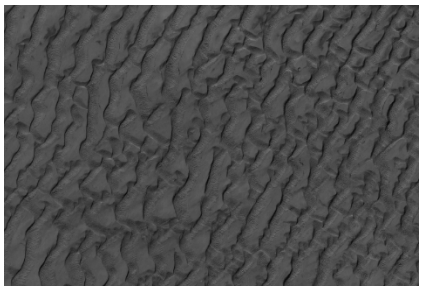
1. Which activity would require this safety symbol shown?

   A. Determining the mass of a density cube
   B. Transferring a metal
   C. Making a model rocket
   D. Determining the volume of a liquid

2. A convergent boundary is formed when two tectonic plates meet and push against each other. What type of landform would occur at this type of boundary?
   A. Canyon
   B. Coastline
   C. Mountain
   D. Plains

3. A scientist is comparing the average snow fall in a year for New York City and Albany. Which graph is the best to use to represent this data?
   A. Single line graph
   B. Double line graph
   C. Single bar graph
   D. Double bar graph

4. This satellite picture shows sand dunes of a desert. The same area was photographed weeks before shows that the shape and location of some sand dunes have changed. Which of these most likely caused the changes in the dunes?



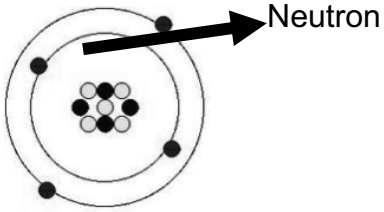
   A. Ocean waves
   B. Flowing rivers
   C. Blowing wind
   D. Crustal uplift

5. Which best describes a proton?
   A. No charge & the same mass as an electron
   B. Positive charge & more mass than an electron
   C. Positive charge & more mass than a neutron
   D. Negative charge & same mass than a neutron

6. Our yellow sun, a main-sequence star, has radiated energy into space. The energy that reaches earth has been responsible for which of the following?
   A. Creating electricity
   B. Influencing the ocean's tides
   C. The limited plant life found at the equator
   D. Convection current within earth's atmosphere

7. If a boat is traveling forward at 9 m/s and the current of the river, that acts opposite of the boat, changes from 3.5 m/s to 2.25 m/s; how does this affect the boat?
   A. The boat will move more slowly
   B. The boat will experience no change in motion
   C. The boat will move faster
   D. The boat comes to a complete stop

8. What element is represented in the illustration?
   A. Li
   B. Ne
   C. Be
   D. He



9. The term “jet stream” is often used by meteorologists to describe which of the following statements—
   A. Pressure exerted by the atmosphere at a given point
   B. Narrow bands of strong wind in the upper levels of the atmosphere
   C. Intense storm that originates in the tropics, forming in a single, warm air mass
   D. Temperature to which air must be cooled for condensation to take place

10. Which group is made from reactive metals?
   A. 1
   B. 7
   C. 17
   D. 18

11. The western region of California has mild temperatures with relatively small changes in temperature between daytime and nighttime. Which of these is most responsible for keeping the temperature range small?
   A. Daily high winds
   B. Frequent cool fronts
   C. Heat from deserts
   D. Moisture from the ocean

12. What is the major difference between speed and velocity?

   A. Velocity is calculated as distance over time; speed is calculated as velocity over time
   B. Velocity has a direction associated with it; speed has no direction associate with it
   C. Speed has a direction associated with it; velocity has no direction associate with it
   D. Speed is calculated as distance over time; velocity is calculated as speed over time

13. Decomposers break down materials in a compost pile. When they do this, they release carbon dioxide into the atmosphere and nitrogen to the soil. Which of the following organisms would most likely be decomposers?
   A. Bacteria
   B. Antelope
   C. Plants
   D. Cougar

14. How many atoms of hydrogen are in glycine?

A. 2 B. 5 C. 9 D. 10

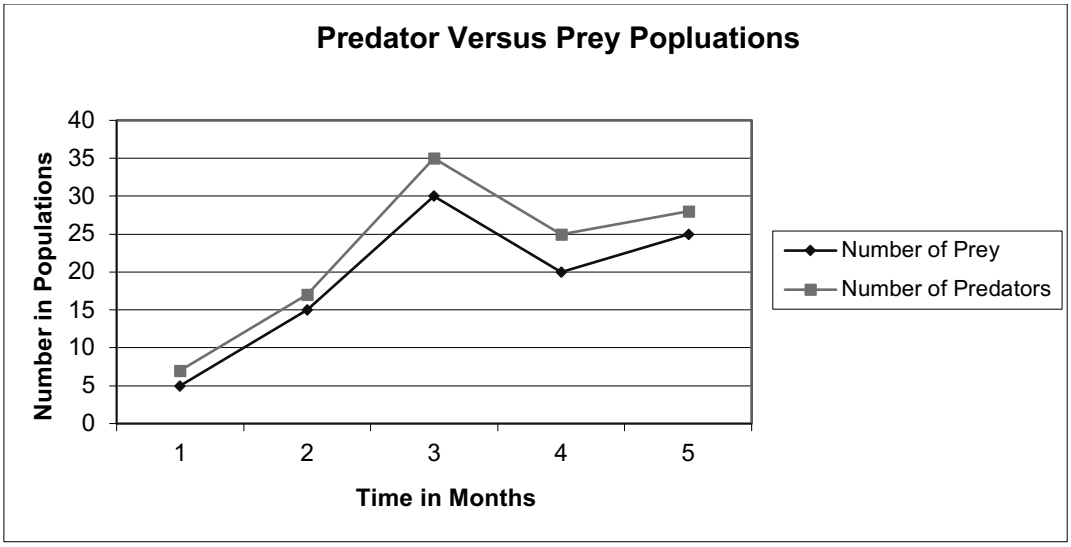
15. Which of the following is the most likely affected by seasonal environmental changes?
    A. Number of peaches on a tree
    B. Growth height of young elephant
    C. Length of horns on a bull
    D. Number of wings on a dragonfly

16. A toddler collects rocks from the backyard. Which would be a chemical property of the rocks collected?
    A. Color of the rock
    B. Texture
    C. Bubbling when lemon juice is spilled on rock
    D. The rock is easily scratched with sandpaper

17. When offshore oil rigs are finished drilling, the platforms can be sunk into the ocean. If this occurs, how will this impact organisms in the immediate area?
    A. The platform destroys all organisms in the area.
    B. The platform releases chemicals into the area.
    C. The platform is used for future oil research.
    D. The platform provides a habitat for organisms.

18. Which of the following has the greatest mass?
    A. Solar system
    B. Nebula
    C. Galaxy
    D. Planet

(continued on next page)

19. 

Based on the data above, what can be concluded about the predator prey relationship?
A. they have an inverse relationship
B. they have a weak relationship
C. they have no relationship
D. they have a direct relationship

20. To calculate the tidal force, which of the following statements is true?
    A. The moon's gravity pull in a specific location plus the moon's gravity pull in a specific location
    B. The moon's gravity pull in a specific location minus the moon's gravity pull in a specific location
    C. The moon's gravity pull in a specific location plus the moon's average gravitational pull over the entire earth
    D. The moon's gravity pull in a specific location minus the moon's average gravitational pull over the entire earth

21. During an experiment to test the thermal absorption rates of different pigmented materials, a white cloth was placed under a fluorescent lamp and a black cloth was placed under an incandescent lamp. A thermometer was placed under each cloth and the temperature was recorded every minute for 25 minutes. When the results were presented, it was pointed out that the experiment contained a flaw. What is the flaw?
    A. the researcher did not have a control variable in the experiment
    B. the researcher did not use the proper lab equipment to obtain the data
    C. the researcher should have used the cloths made of the same pigment
    D. the researcher did not have a dependent variable in the experiment

22. A rocket is launched to the moon. If no outside force is applied once the rocket reaches outer space, what happens to the speed as it travels in outer space?
    A. It will speed up
    B. It will slow down
    C. It will remain constant
    D. It will fluctuate

23. Dot diagrams, like the one shown below, are used to represent:

A. Atomic numbers
B. Atomic mass
C. Isotopes
D. Valence electrons

24. If the earth's axis was not tilted in relation to its plane of orbit, which of the following would most likely occur?
A. The equator would have two seasons
B. There would be no distinct seasons
C. Night in the northern hemisphere would be longer than the southern hemisphere
D. Summer in the northern hemisphere would be longer than the southern hemisphere

25. In a quarter an hour, a bicyclist travels 20 km. What is the cyclist average speed?
A. 40 km
B. 80 km
C. 40 km/hr
D. 80 km/hr

26. The sun is to __ as Mars is to Venus.
A. Tau Ceti
B. Betelgeuse
C. Rigel
D. Sirius

27. A mixture of salt water needs to be separated. Which piece of equipment would be best to separate this mixture?
A. Funnel and filter paper
B. Magnet
C. Bunsen burner
D. Stirring rod

28. How much of the lunar surface receives sunlight at one specific instant?
A. One half
B. One third
C. One fourth
D. All of it

29. Which of the following units would be the most appropriate to measure the height of a newly sprouted plant?
A. m
B. L
C. mL
D. mm

30. Using the electromagnetic spectrum, astronomers can determine all of the following characteristics of a distant star except which of the following?
A. Its chemical composition
B. The organisms present
C. Its temperature
D. Its density

31. Thomson depicted his model of the atom using a plum pudding reference. The model of the atom has undergone many changes since then. What is the best scientific reason for these changes in the model?
    A. Computer generated graphics
    B. People are more open to changes
    C. Modifying ideas based on discoveries
    D. People want the truth

32. The plate tectonic theory can best explain which of the following?
    A. Earthquakes
    B. Mountain construction
    C. Volcanic activity
    D. Fossil record

33. Scientific models represent objects, systems, or events and are used as a toll to understand the world around us. Which of the following is not an example of a scientific model?
    A. Model of Saturn
    B. Prototype of a rocket
    C. Data table
    D. Dinosaur fossil replica

34. Which of the following shows a system for identifying hazards associated with various materials?
    A. Biohazard symbols
    B. Hazard to environment symbols
    C. NFPA label
    D. SDS label

35. After the energy from the sun has reached the Earth, thermal energy always moves from _ to _ areas naturally.
    A. Hot; cold
    B. Warm; hot
    C. Cold; cool
    D. cold; hot

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020 – 2021 SCIENCE II
FALL/WINTER TEST

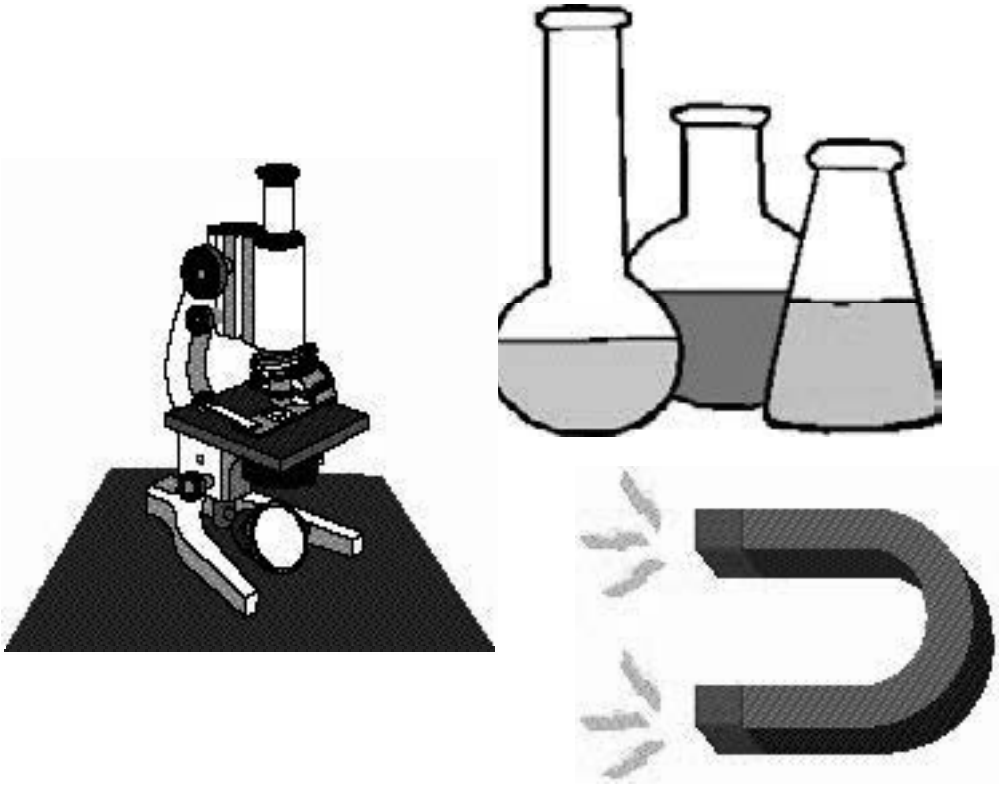
Answer Key

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

SPRING DISTRICT 2020-2021

A+ ACADEMICS

University Interscholastic League



Science I

DO NOT OPEN TEST
UNTIL TOLD TO DO SO

UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE I
SPRING TEST

1. Which of these converts radiant energy to chemical energy?
   A. The bulb of a flashlight
   B. The battery of a phone
   C. The leaf of a vine
   D. The screen of a television

2. Which of the following statements describe the best way to heat a test tube over a Bunsen burner flame?
   A. Directly hold the test tube at a slight angle above the flame
   B. Put on a rubber glove and then directly hold the test tube at a slight angle above the flame
   C. Put the test tube in a test tube rack and then directly hold the test tube rack at a slight angle above the flame
   D. Put the test tube in a test tube holder and then directly hold the test tube at a slight angle above the flame

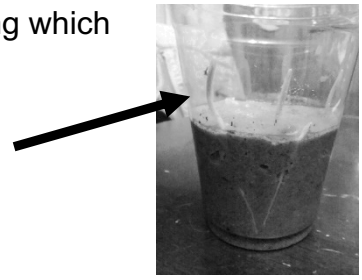
3. A non-native organism is introduced to a diverse climax community. If the non-native organism has no predators, what short term effect will non-native organism have on a community?
   A. The number of native organisms remain constant
   B. The number of native organisms will decrease
   C. The non-native organisms will become extinct
   D. The non-native organisms will develop new predators

4. Phytoplankton consists mainly of single-celled algae. They live in aquatic environments and are autotrophs. What is the role of phytoplankton in this situation?
   A. Consumer
   B. Decomposer
   C. Parasite
   D. Producer

5. Which of the following is true about ecological succession?
   A. Succession leads to the equilibrium in an ecosystem
   B. Succession prevents ecosystems from reaching equilibrium
   C. There is no relationship
   D. Succession & equilibrium are the same thing

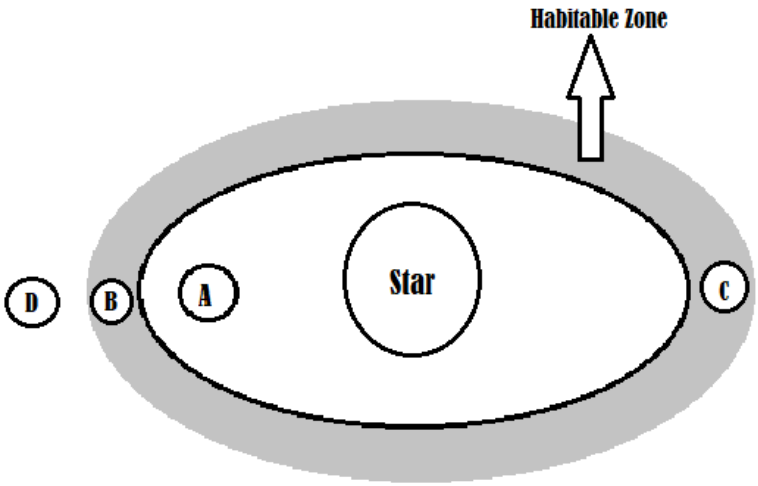
6. When sugar is dissolved in a cup of hot water, the resulting solution would represent which of the following —
   A. chemical, irreversible change
   B. physical, irreversible change
   C. chemical, reversible change
   D. physical, reversible change

7. The roots of the plant in the image to the right are exhibiting which behavior?
   A. Autotropism
   B. Hydrotropism
   C. Geotropism
   D. Phototropism



8. A man pours hot coffee into two mugs are composed of different materials. The man notices that one mug keeps hot coffee warmer than the other mug and designs an experiment based on the observations. Which of the following questions should the man ask when designing the experiment?
   A. What is the best temperature to drink hot coffee?
   B. What brand of coffee stays warm the longest?
   C. What mug will hold the greatest volume of hot coffee?
   D. What type of mug material is the best for keeping liquids warm?

9. Which planet would most likely be a location where life could be observed based on the information provided?



Planet	Oxygen	Water
A	Yes	Yes
B	Yes	No
C	Yes	Yes
D	No	Yes

   A. A B. B C. C D. D

10. What provides the body with the energy it needs for growth, movement, response, and repair?
   A. Fiber
   B. Minerals
   C. Alcohol
   D. Sugar

11. A scientist wants to classify organisms from a specific biome using their name, as well as determining if they are extinct, endangered, or threatened. The most logical way to organize this information would be to use which of the following?
   A. Bar graph
   B. Data table
   C. Line graph
   D. Tally marks

12. What type of dispersal is mostly likely used by this organism?

A. Animal
B. Wind
C. Water
D. Gravity

13. Which of the following events would most likely to cause an environmental disturbance in an archipelago?
A. Earthquake
B. Volcanic eruption
C. Thunderstorm
D. Fire caused by lightning strike

14. Blubber in artic animals is an internal structural adaptation that allows animals to be successful in the environment. What function does blubber perform?
A. It makes the animal look larger to intimidate predators
B. Allows for better balance
C. Provides more friction
D. It protects the animal from freezing temperature

15. The Palo Duro Canyon is located in the panhandle of Texas.

What most likely created the riverbed?
A. Glaciers
B. Plate collisions
C. Water erosion
D. Volcanic activity

16. Which organism has small vacuoles?
A. Plants B. Animals C. Virus

17. A man was changing the oil in his truck. He then dumped the used oil around the fence in his backyard to prevent weeds from growing. What the man didn't know was he was actually hurting the environment because of which of the following?
A. The oil rots the base of the fence
B. The oil goes deep into the soil and can pollute the groundwater
C. The oil kills weeds and they are an important part of the environment
D. The oil attracts more harmful insects

18. The cell wall is most similar to which body system?
    A. Nervous
    B. Digestive
    C. Respiratory
    D. Integumentary

19. A scientist is creating a graphic organizer to explain the result of an experiment that included offspring from sexual reproduction. What information would be incorrect if it was placed in the scientist's graphic organizer?
    A. Requires two cells from different parents
    B. Creates a genetically uniform offspring
    C. Offspring have a better chance for survival
    D. Offspring have increased resistance to disease

20. Which of the following characteristics of the planet Saturn most likely makes it impossible for life to exist?
    A. 9 times wider than Earth
    B. Has 53 confirmed moons
    C. Extreme temperature of -178 degrees Celsius
    D. Rotational period of 11 hours

21. Humans have selectively breed canines for specific jobs. Which dog is most likely to carry heavy weights in an environment that is cold?

A. 	B. 
C. 	D. 

22. Several agencies are wanting to send a manned craft to explore Mars. Which of the following would NOT be a problem for astronauts when they got to Mars?
    A. The ability to produce food
    B. Radiant energy for solar panels
    C. Amount of oxygen in the atmosphere
    D. Amount of liquid water present on the planet

23. Which of the following do rattlesnakes do when they feel threatened?
    A. Rattle their tail and hiss
    B. Make their hair stand up
    C. Close their eyes
    D. Slow their breathing

24. Despite its having limitations, what are some advantages of using the following model when learning about our solar system?

    A. Accurately demonstrates the planets orbit the sun in elliptical paths.
    B. Accurately demonstrates planetary order and general appearance.
    C. Shows relative distances between objects in our solar system.
    D. Shows how the sun's radiant energy makes some planets too hot for life to exist.

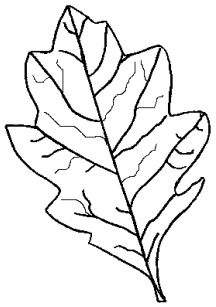
25. Which is not an example of heredity in humans?
    A. Height
    B. Eye color
    C. Spoken language
    D. Freckles

26. Which of the following is least likely to make an animal vomit?
    A. An infection in the stomach
    B. Consuming large amounts of water
    C. A toxin in the body
    D. Feeling cold after swimming in cold water

27. In sexual reproduction, how many genes does an offspring get for each trait?
    A. 0 B. 1 C. 2 D. 4

28. Theophrastus is known as "The Father of ____" because of two seminal works concerning autotrophic organisms. To which field of study has Theophrastus work contributed the most scientific understanding?
    A. botany
    B. genetics
    C. medicine
    D. zoology

29. Use the Dichotomous key to identify the leaf shown below:



1a	Leaf edge has no teeth, waves, or lobes	Go to 2
1b	Leaf edge has teeth, waves, or lobes	Go to 3
2a	Leaf has bristle at the tip	Shingle Oak
2b	Leaf has no bristles at the tip	Go to 4
3a	Leaf edge is toothed	Lombardy Poplar
3b	Leaf edge has waves or lobes	Go to 5
4a	Leaf is heart shaped	Red Bud
4b	Leaf is not heart shaped	Live Oak
5a	Leaf edge has lobes	English Oak
5b	Leaf edge has waves	Chestnut Oak

A. Shingle oak
B. Lombardy polar
C. Red bud
D. Live oak
E. English oak

30. Which of the following is least likely to affect the phenotypes of an organism?
A. Nucleus
B. Vacuole
C. Genes
D. Chromosomes

31. Ovaries produce eggs and hormones. What body system does this best relate to?
A. Integumentary
B. Excretory and muscular
C. Endocrine and reproductive
D. Nervous and respiratory

32. Blood consists of red blood cells and white blood cells. Blood is mostly likely a
A. Tissue
B. Organ
C. Organ system
D. Cell

33. Based on the cell theory, what do the following organisms have in common?

A. Reproduce spontaneously
B. Cells are the basic unit of structure
C. Organisms can photosynthesize
D. Made of all the same atoms

34. Which activity would require the safety symbol for a sharp object?
A. Determining the mass of a density cube
B. Transferring a metal
C. Making a model rocket
D. Determining the volume of a liquid

35. Which lab investigation requires knowing the location of the fire extinguisher and the fire blanket?
A. When investigating the effectiveness of various types of antibacterial wipes
B. When testing for the presence of sugar using benedicts solution, Bunsen burner, beaker, and test tubes
C. While dissecting a sheep eye using gloves, scalpel, probes, and pins
D. While comparing the rate of mold growing on oranges

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020-2021 SCIENCE I
SPRING TEST

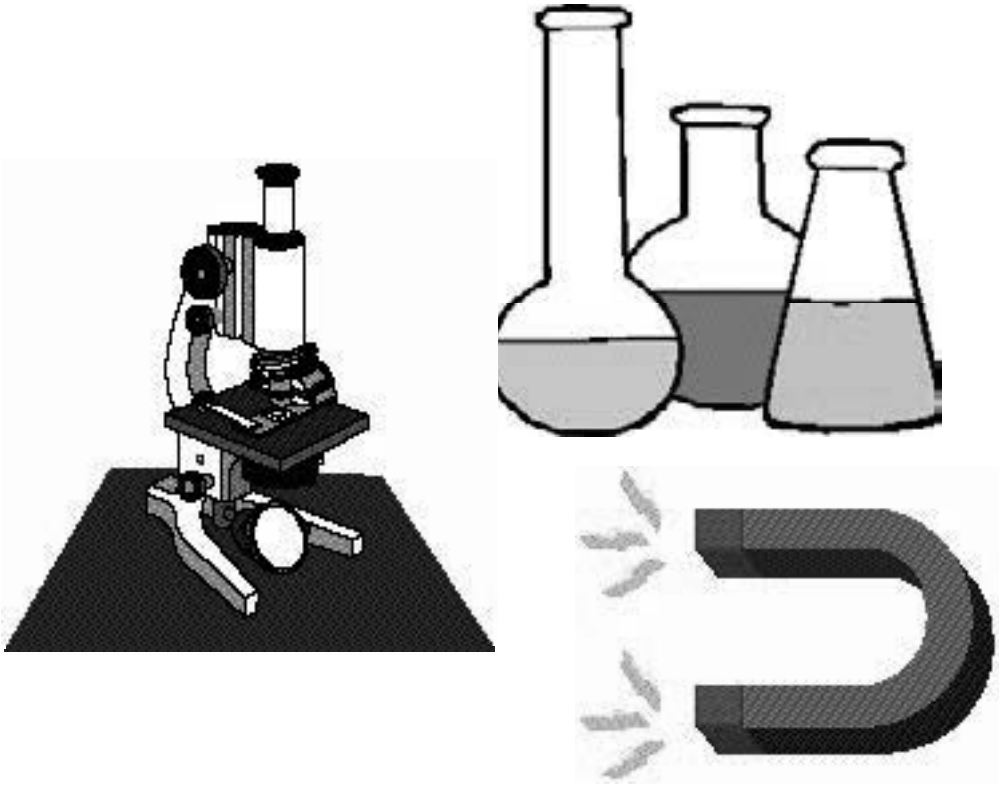
Answer Key

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

SPRING DISTRICT 2020-2021

A+ ACADEMICS

University Interscholastic League



Science II

DO NOT OPEN TEST
UNTIL TOLD TO DO SO

UNIVERSITY INTERSCHOLATIC LEAGUE
2020-2021 SCIENCE II
SPRING TEST

1. Scientists discovered rocks collected from West Texas and rocks collected from mountains in Antarctica were exactly the same age. If additional research showed that the rocks were geologically the same, this discovery would provide evidence of which of the following?
   A. Coastal erosion
   B. Plate tectonics
   C. Atmospheric currents
   D. Glacial melting

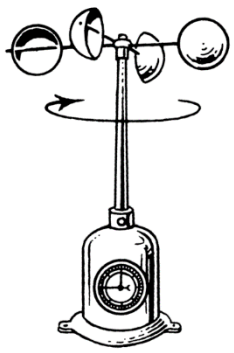
2. Which of the following best supports the Big Bang Theory?
   A. Various shapes of galaxies
   B. Speed of light
   C. Red & blue shifts of light from stars
   D. The motion of planets in orbit

3. In the Pacific Ocean, islands were formed because of which of the following?
   A. The sea floor spread apart and sediments congregated due to ocean currents.
   B. The turgor pressure of the water causes magma to rise to the surface.
   C. The sea floor spreads apart and magma is push up to the surface.
   D. Tectonic plates are pushed together, forming underwater mountain ranges.

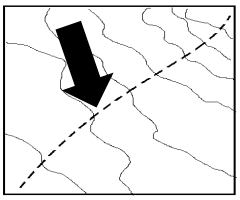
4. Scientists observe that when continental plates & oceanic plates collide, the oceanic plate is forced below the continental pate. This might be because –
   A. The different densities of the plates
   B. The different masses of the plates
   C. Convection current
   D. The width of the plates

5. A student reads a topographic map and determines the highest elevation to be 1800 meters and the lowest elevation to be 1120 meters. Based on this information, what is the difference between these elevations?
   A. 2920 m
   B. 680 m
   C. 340 m
   D. 1800 m

6. How would the motion of an anemometer be changed if the amount of radiant energy that reached the Earth's atmosphere was to increase?
   A. It would spin in the opposite direction
   B. It would spin faster
   C. It would spin slower
   D. It would remain constant



7. What does the dashed line on the topographic map likely represent?



   A. Running trail
   B. Change in rock density
   C. Stream
   D. Vegetation line

8. Which of the following is an adaptation for plants in a rainforest that need to obtain sunlight in order to photosynthesize?
   A. Vines wrapping around tree trunks
   B. Vibrant colored flowers
   C. Shallow root system
   D. Small leaves

9. Which of the following form of energy causes water to evaporate?
   A. Chemical
   B. Radiant
   C. Electrical
   D. Potential

10. This type of weather front usually brings a decrease in temperature, clearing skies, & a sharp change in the wind direction. Which of the following best describes this scenario?
   A. Directional front
   B. Stationary front
   C. Warm front
   D. Cold front

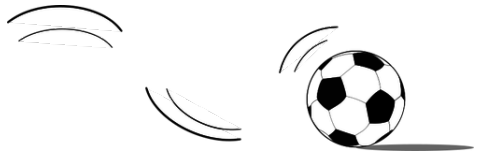
11. Changes in the polar ice caps would most likely indicate changes in what of the following?
   A. Solar flares
   B. Earth's climate
   C. Tectonic plates
   D. Biodiversity

12. La Niña represents periods of below average sea surface temperatures across the equatorial Pacific Ocean. What is most likely to occur due to these specific conditions?
   A. Wetter than average conditions in the U.S. gulf coast
   B. Increase in severe storms originating in the Pacific Ocean
   C. Decrease in hurricanes originating in the Pacific Ocean
   D. Colder temperatures in the winter for the southeast

13. Ocean currents move warm and cold water throughout the oceans, affecting weather systems and climates. Where do cold ocean currents originate?
   A. Close to the poles
   B. Close to the equator
   C. Close to the continents
   D. Near the middle of oceans

14. Which relationship is most like dogs and ticks?
   A. Nitrogen-fixing bacteria and clover
   B. Athlete’s foot fungus and humans
   C. Bees and colorful flowers
   D. Deer and cougar

15. A force acts on a soccer ball for four seconds causing it to accelerate. If the ball is replaced with a similar ball with four times the mass and the same force is applied for the same amount of time, the acceleration of the similar ball will now be –



A. One fourth the value
B. One half the value
C. Twice the value
D. Four times the value

16. Which tool would be used to determine elements that are present in stars in a distant galaxy?
A. Telescope
B. Spectroscope
C. Microscope
D. Psychrometer

17. Large forest fires have become common in parts of United States in the past few years. The forest ecosystem is changed by this. Which of the following is also a result of a large forest fire?
A. Carbon dioxide in the atmosphere decreases.
B. Biodiversity increase.
C. Mudslides can cover roads and river valleys after rains.
D. Soil becomes less fertile.

18. It has been suggested that student misbehaviors are more common during a full moon than other times of the month. What could be done to test this hypothesis?

A. Observe the behavior during a full moon & create categories for behaviors
B. Create a survey
C. Ask students when they misbehave the most
D. Look a discipline records from previous years & compare with time of full moon

19. The world's coasts are being populated at a very rapid rate. In the United States, counties directly on the shoreline constitute less than 10 percent of the total land area, but account for 39 percent of the total population. Coastal areas are substantially more crowded than the U.S. as a whole, and population density in coastal areas will continue to increase in the future. In fact, the population density of coastal shoreline counties is over six times greater than the corresponding inland counties and this number continues to rise. Coastal areas are also the most visited by tourists across the globe. Which of the following threats to the ocean is most likely NOT caused by human actions?
A. Increased pollution of marine environments
B. Damaged coral reefs
C. Higher hurricane wind speed
D. Damaged sea turtle nesting sites

20. What is the electrical charge of the nucleus of an atom that has 12 protons, 13 neutrons, and 11 electrons?
A. -11
B. +12
C. -12
D. +11

21. A chemist is identifying the elements present in an unknown sample. What characteristic of an element's atoms will help the chemist determine the element's identity?
    A. The number of protons
    B. The number of neutrons
    C. The number of valence electrons
    D. The number of electrons

22. If a lab requires that students have goggles, a graduated cylinder, and a thermometer; what task might they be performing?
    A. Calculating density
    B. Measuring volume & temperature of a liquid
    C. Measuring mass & temperature of a solid
    D. Determining the meniscus

23. Which of the following statements best describes the elements located in Group 18?
    A. Chemically stable and liquid at room temperature.
    B. Have eight valence electrons and are flammable.
    C. Magnetic and boil at low temperatures.
    D. Gaseous at room temperature and chemically stable.

24. In a mountain range there is a point called a tree line, in which trees do not normally grow near the top of the mountain. What environmental condition would most likely prevent trees from growing in this area?
    A. No oxygen is present
    B. The air pressure it to high
    C. The temperature is to low
    D. There is no sunlight

25. Which of the following contains the greatest number of elements?
    A. O_2
    B. CH_4
    C. NaCl
    D. HNO_2

26. Which of the following would you not do to minimize the impact of human activities on the world?
    A. Reusing items
    B. Renovate all housing on a university campus
    C. Recycle
    D. Reduce consumption

27. Coal is comprised of carbon and hydrocarbons. When coal is burned in the presence of oxygen it produces carbon dioxide. Which of these is the most likely evidence that a chemical reaction has occurred when coal burns?
    A. The size and shape of the coal changes.
    B. Oxygen is present.
    C. A new substance is produced.
    D. Coal is made up of multiple elements.

28. Which of the following is an alkaline earth metal?
    A. Potassium
    B. Barium
    C. Aluminum
    D. Silver

29. When did Newton first propose his Laws of Motion?

A. During World War I
B. After the Civil War
C. Approximately 300 years ago
D. After humans orbited the Earth

30. A student uses a warped meter stick to take measurements in an experiment. Which of the following occurred when the student introduced the warped meter stick into the experiment?
A. Method error
B. Instrumental error
C. Human error
D. Estimation error

31. A leaf fell from a tree branch. Which of these bests describes why the leaf fell in a crooked path instead of straight down?
A. Objects with irregular shapes always fall in straight lines.
B. Once the leaf fell, it continued moving in one direction because the forces were equal.
C. Air resistance and gravity applied changing and unbalanced forces to the leaf.
D. The force of the air on the leaf was more than the force of gravity.

32. Light from moving objects will appear to have different wavelengths depending on the relative motion of the source and the observer. An astronomer discovers two stars. Both stars appear to be red, but Star A appears a darker red. Which of the following can be concluded?
A. Star A is moving towards the Earth
B. Star A is moving away from Earth faster than Star B
C. Star B is moving away from Earth and Star A is moving towards it
D. Both Star A and B are moving towards Earth at similar velocities

33. Speed is a scalar type of measurement and velocity is a vector type measurement. What is the main difference between scalar and vector measurements?
A. Scalar measurements include a direction
B. Vector measurements include a direction
C. Neither scalar nor vector measurements include a direction
D. Both scalar and vector measurements include a direction

34. Each of these is an example of how research has changed scientific understanding except:
A. Classification of living things now includes six kingdoms instead of five
B. Protons and electrons are now known to be made of smaller particles of matter
C. The metric system is now used around the world instead of other less precise systems
D. Heat, which was once thought to be fluid, now is known as a form of energy.

35. A Safety Data Sheet for a alcohol substance has the following information:

Flash Point: 12 °C TO 16 °C

Based on this information it should be stored how?
A. Contained inside a brown glass bottle
B. Away from open flames
C. Inside a freezer
D. Packed inside a box of cat litter

UNIVERSITY INTERSCHOLASTIC LEAGUE
2020-2021 SCIENCE II
SPRING TEST

Answer Key

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