Bighelp for education

Science Bee 2018

Level 6

A Catalyst For Better Education In India
Science Bee Contest 2018
Level 6

Name of the student: _____
Parent Cell Phone: _____
Student Grade: _____

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Score Card

For the use of Science Bee coordinator ONLY:

Score [1-35] : _____
Score [36-40] : _____
Total Score : _____

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1. **While designing a new machine several prototypes were made. During which of the following steps is it most appropriate to use a prototype?**

A. Distributing information about the machine

B. Researching how other company is making them

C. Testing whether the machine prototypes are working properly

D. All of the above

2. **Tea from the kettle was poured in a cup to be served and kept at room temperature. Which of the following statements best describes the flow of energy during this time?**

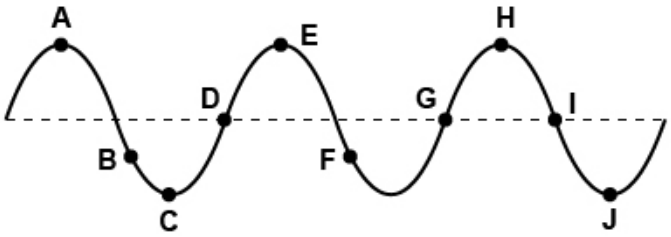
A. Cold energy flows from the tea to the room until the tea is colder than the room.

B. Heat energy flows from the room to the tea until the tea is warmer than the room.

C. Cold energy flows from the tea to the room until the tea and the room are the same temperature.

D. Heat energy flows from the tea to the room until the tea and the room are the same temperature.

3. **The distance between which two points is one wavelength?**



A. A and D

B. B and F

C. D and G

D. G and I

4. Sunspot is _____

A. That gases that extends 1 million km from sun's surface

B. Dark, cool areas of the sun

C. A pattern of stars named after religious/mythical objects/animals

D. Big Dipper

5. We need to sustain tress, as the following was directly caused by the Photosynthesis:

A. an increase in the percentage of oxygen in the atmosphere

B. a decrease in the amount of soil being made

C. a decrease in the amount of salt in the ocean

D. an increase in the average global temperature of the atmosphere

6. What is the instrument that is used to measure sunshine?

A. Campbell - Stokes Recorder

B. Oktas recorder

C. Hygrometer recorder

D. Coriolis Effect recorder

7. John was installing solar panels on the roof of a client's house. The panels had to provide enough electricity to power the house yearround. John needed to decide how many panels to install and w hich side of the roof to install them on. If he put the panels on the side that got the most sun, then he could use fewer panels, and the client would save money. John installed sunlight sensors on both sides of the roof. Then, he measured the amount of sunlight the sensors on each side of the roof recorded over one sunny summer day.

Which of the following could John's test show?

A. the amount of sunlight the roof would get throughout the year

B. which side of the roof got more sun over one day

C. how many solar panels could fit on each side of the roof

D. Take a break now

8. Which of the following is a function of the nervous system?

A. releasing ATP into contracting muscle tissues

B. signaling muscle tissues to contract

C. producing lactic acid in fatigued muscle tissues

D. increasing cellular respiration in muscle tissues

9. To express the distance between the Milky Way galaxy and other galaxies, the *most* appropriate unit of measurement is the

A. meter.

B. kilometer.

C. light-year.

D. astronomical unit.

10. In a comparison of metals to nonmetals, metals tend to have

A. lower melting points and greater conductivity than nonmetals.

B. lower conductivity and lower density than nonmetals.

C. higher density and lower melting points than nonmetals.

D. greater conductivity and higher melting points than nonmetals.

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11. A spring scale is pulled downward and readings are recorded.

Data Table

Distance Pulled	Spring Scale Reading
1.0 cm	4 N
1.5 cm	6 N
2.0 cm	8 N
2.5 cm	10 N

If the spring is pulled 3.5 cm, the spring scale should read

A. 12 N

B. 13 N.

C. 14 N.

D. 15 N.

12. Which of the following forms of energy is released or absorbed in *most* chemical reactions?

A. light energy

B. electrical energy

C. sound energy

D. heat energy

13. Scientists found that, over a period of 200 years, a mountain pond was transformed into a meadow. During that time, several communities of organisms were replaced by different communities. Which of these *best* explains why new communities were able to replace older communities?

A. The original species became extinct.

B. Species in the older community died from old age.

C. The abiotic characteristics of the habitat changed.

D. Diseases that killed the older organisms disappeared.

14. Which of these *best* illustrates natural selection?

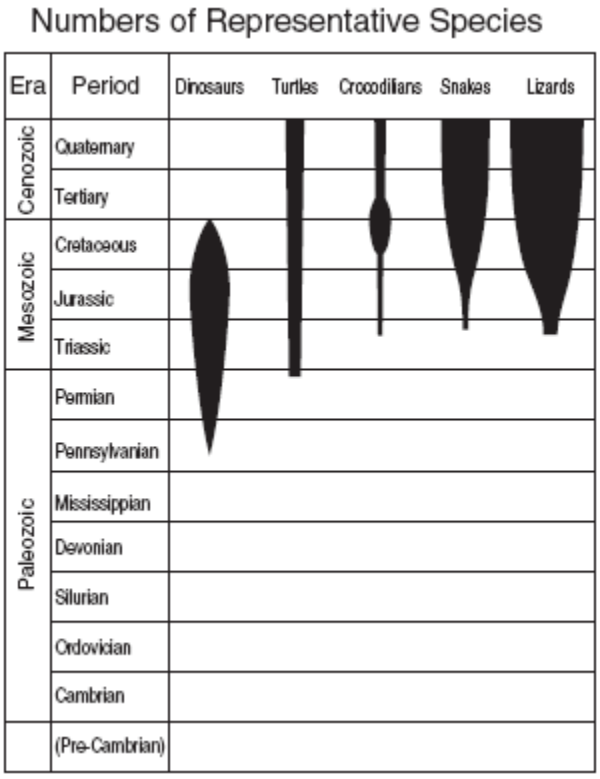
A. An organism with favorable genetic variations will tend to survive and breed successfully.

B. A population monopolizes all of the resources in its habitat, forcing other species to migrate.

C. A community whose members work together utilizes all existing resources and migratory routes.

D. The largest organisms in a species receive the only breeding opportunities.

15. According to this information, which group demonstrated the greatest biodiversity during the Cretaceous period?



A. dinosaurs

B. crocodilians

C. snakes

D. lizards

16. Electrical fires cannot be safely put out by dousing them with water. However, fire extinguishers that spray solid carbon dioxide on the fire work very effectively. This method works because carbon dioxide

A. displaces the oxygen.

B. renders the fire's fuel non-flammable.

C. forms water vapor.

D. blows the fire out with strong wind currents.

17. Day on Saturn takes about 10 Earth hours. Which fact would *best* explain this short day?

A Saturn is less dense than Earth.

B Saturn is much farther from the Sun than Earth.

C Saturn rotates more rapidly than Earth.

D Saturn's orbit has greater eccentricity than Earth's.

18. A student models an impact crater on the Moon by dropping a marble from a known height onto a pan of smooth flour. Before reaching any conclusions about the results of this simple experiment, the student repeats the activity several times so that

A. differences produced by standard variability in conditions become clear.

B. she can produce as large a crater as possible before measuring a diameter.

C. her ability to simulate a meteor impact becomes more realistic with practice.

D. she can illustrate a perfectly circular crater for her write-up of the experiment.

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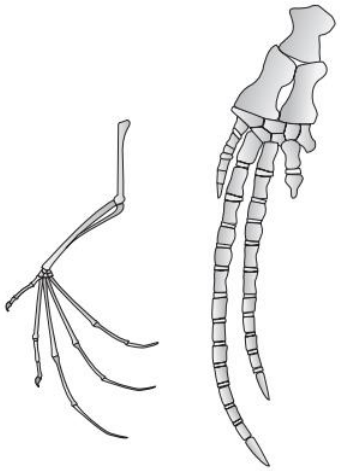
19. The bone structures in a bat wing and a whale flipper are shown below.



Bat wing Whale flipper

Which of the following statements best explains the similarity between the bone structures in the bat wing and the whale flipper?

A. Both animals evolved from a common ancestor.

B. Organisms that flew evolved into organisms that swim.

C. All organisms evolve following the same basic pattern.

D. All animal parts used for motion evolve in the same way.

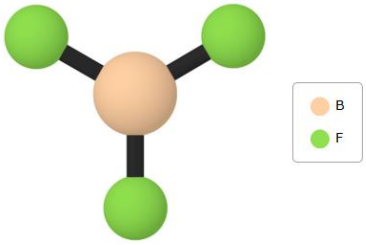
20. Molecular formula of the following:

A. **BF_3**

B. **B_2F_2**

C. **BF**

D. **B_3F**



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21. A corn plant has a genotype of Ttyy, what are the possible genetic combinations that could be present in a single grain of pollen from this plant?

A. Ty, ty

B. TY, ty

C. TY, Ty, ty

D. Ty, ty, tY, TY

22. The table below shows the length of a year on Mars and on Earth.

Planet	Approximate Length of Year (Earth days)
Earth	365
Mars	687

Which of the following statements best explains why Mars has a longer year than Earth?

A. Earth is closer to the Sun.

B. Mars climate is warmer.

C. Earth's axis has a greater tilt.

D. Mars rotates slower on its axis.

23. Which of the following is false?

A. The nucleus controls all activity in the cell

B. The nucleus carries DNA

C. The plant cell has no nucleus

D. The nuclear membrane connects with the endoplasmic reticulum

24. If two objects have the same volume but one has a greater mass, the one with greater mass

A. Has a lower density

B. Has a higher density

C. Will float

D. Will sink

25. When a layer of cool air at the surface of Earth is found under a layer of warmer air above it, the result is known as

A. the Coriolis effect.

B. the greenhouse effect.

C. a temperature inversion.

D. an upwelling.

26. When food is heated to a temperature that is high enough to kill most harmful bacteria without changing the taste of the food

A. Pasteurization

B. Fermentation

C. Optimization

D. Inoculation

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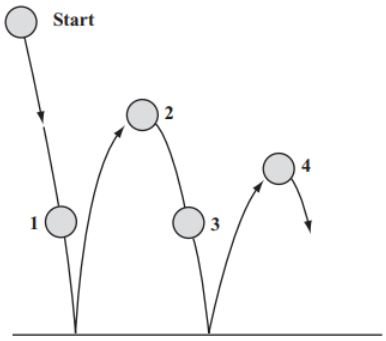
27. The diagram below shows the path of a ball bouncing on the ground. Four locations in the path are identified with numbers.

At which location does the ball have the greatest amount of kinetic energy?



A. location 1

B. location 2

C. location 3

D. location 4

28. A substance with a mass of 10 g is heated to produce two new substances. The mass of the first new substance is 9.3 g and the mass of the second new substance is 0.7 g. Which of the following is best demonstrated by this example?

A. heat transfer

B. physical change

C. law of conservation of mass

D. law of conservation of energy

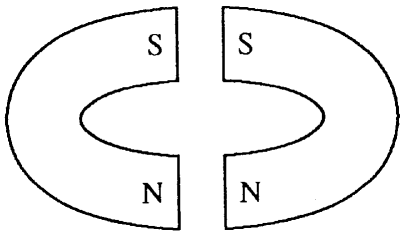
29. The magnets in the figure _____ each other?

A. Attract

B. Repel

C. Nullify

D. Bound to



30. The function of an electric motor is to change ____.

A. chemical energy to electrical energy

B. electrical energy to chemical energy

C. Electric energy to mechanical energy

D. Mechanical energy to electrical energy

31. Beams were recommended to add during bridge construction throughout the structure

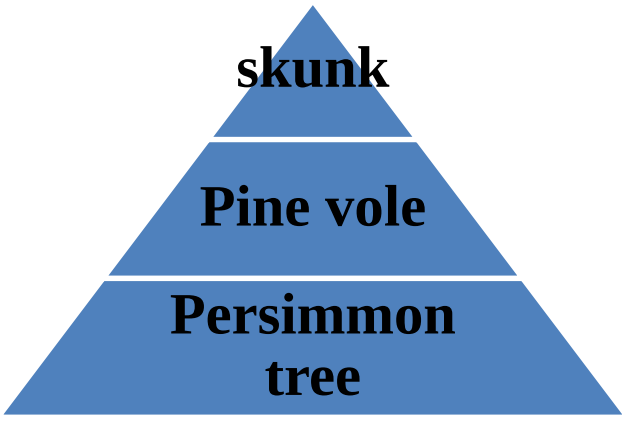
A. to reduce shear forces

B. to increase tension forces

C. to spread tension and compression forces over a wider area

D. to create torsion forces in the vertical and diagonal directions

32. The diagram below shows an energy pyramid for a lake ecosystem.



Which of the following best describes the role of the pine vole in this energy pyramid?

A. producer

B. decomposer

C. primary consumer

D. secondary consumer

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Fill in the Blanks. Check your Spellings!

33. The atmosphere traps solar radiation, because of gases such as CO2, methane and water vapor is _____

34. _____ is the tendency of a substance to undergo chemical changes.

35. The variable that you change during an experiment is _____

36. A/an _____ organism has only one cell.

37. True or false? A liquid will float if it is more dense than the liquid it is placed in.

_____

38 and 39. White blood cells help protect the human body from disease, in this example which two body systems working together _____ and _____

40. An object at rest will remain at rest unless acted upon by an unbalanced force; an object moving at a constant velocity will remain in the same motion unless acted upon by an unbalanced force.

Name the law: _____

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Level 6 Answer Keys:

S.No	Answer
1	c
2	d
3	c
4	b
5	a
6	a
7	b
8	b
9	c
10	D
11	C
12	d
13	c
14	a
15	d
16	a
17	b
18	a
19	a
20	a
21	a
22	a
23	c
24	b
25	c
26	a
27	a
28	c
29	a
30	c
31	c
32	c

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33	green house effect
34	reactivity
35	indendent variable
36	Unicellular
37	FALSE
38, 39	Immune and circulatory
40	Newton's first law of motion