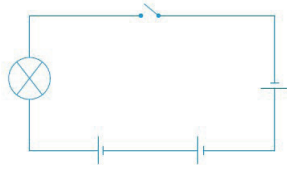


INTERNATIONAL **STEM** OLYMPIAD
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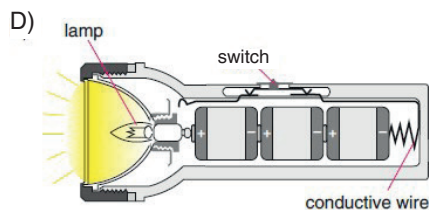
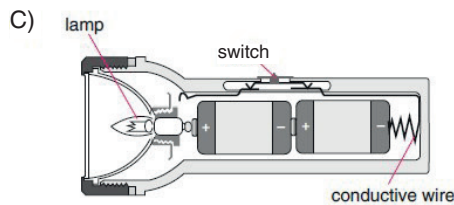
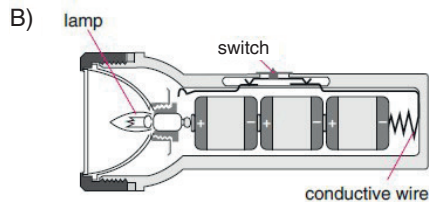
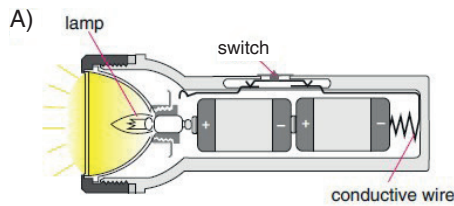
GRADES 3-4-5

**SCIENCE
PAST PAPERS**

1.



Which flashlight does the above circuit model belong to?



2.



Clay water container – keeps water cool



Watermelon – leaving fresh cut watermelon in direct sunlight cools it down



Cologne – sprinkling cologne cools your hand

What is the common feature above in all given situations?

- A) Evaporation B) Condensation
C) Sublimation D) Melting

3.

Petrol is a liquid. When you fill up, the petrol flows through the pipe and into the petrol tank in your car.

Why could you not fill up the tank in this way if your car used a solid fuel like coal?

Choose the correct statement to explain this situation.



- A) They do not have fixed shape and fixed volume
B) They have fixed shape and fixed volume
C) They do not have fixed shape, but they have fixed volume
D) All of them

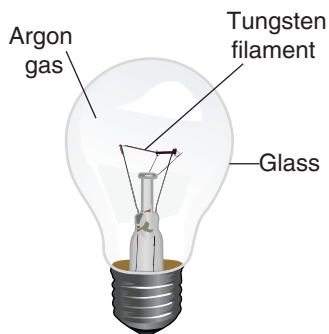
4.

Chemical elements:

- A) are always solids.
- B) are either solids or liquids.
- C) are always gases.
- D) can be solids, liquids or gases.

5.

The diagram shows an electric bulb



Tungsten is used for making filament of an electric bulb. When the bulb is used current flows through the tungsten filament. The filament becomes very hot and glows.

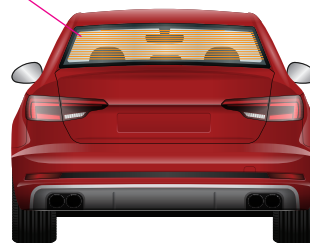
Why is filament made of tungsten?

- A) It has a low melting point
- B) It has low resistivity
- C) It is not a good conductor
- D) It has a high melting point

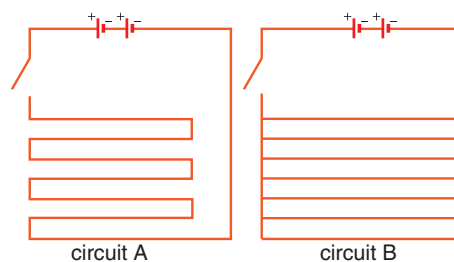
6.

The rear window of this car contains a heating element. The heating element is part of an electrical circuit connected to the battery of the car.

wires of heating element



The diagrams below show two ways of connectign the circuit of a heating element.

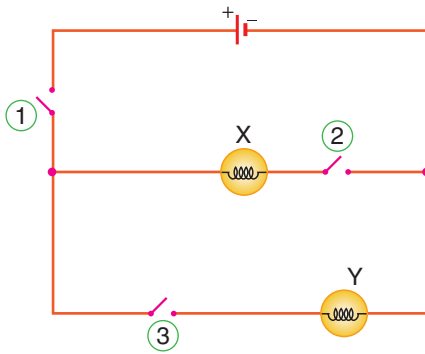


What are the names of each type of circuit?

	Circuit A	Circuit B
A)	Series circuit	Parallel circuit
B)	Parallel circuit	Series circuit
C)	Parallel circuit	Parallel circuit
D)	Series circuit	Series circuit

7.

Which switches must be pressed to make bulb X turn on?



- A) 1 and 2 only
- B) 1 and 3 only
- C) 2 and 3 only
- D) all three of them

8.

Electricity is:

- A) a source of energy.
- B) a kind of liquid inside the wires.
- C) tiny particles called electrons flowing through the wires.
- D) tiny particles called atoms flowing through the wires.

9.



Hydroelectric energy



Solar energy



Geothermal energy



Wind energy

Which one of the energy sources given above are renewable energy sources?

- A) I, III
- B) I, II, IV
- C) II, III, IV
- D) I, II, III, IV

10.

Where does the Earth get most of its heat and light from?

- A) the Sun
- B) the Moon
- C) electricity
- D) burning fossil fuels

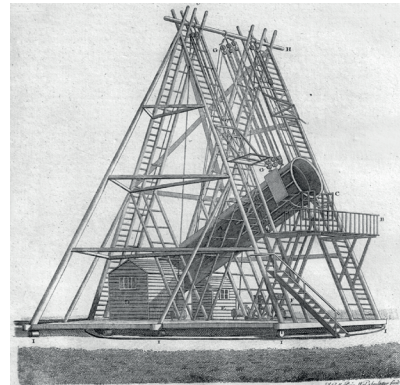
11.

Which one of these foods is rich in carbohydrates?

- A) Fish
- B) Whole wheat bread
- C) Meat
- D) Eggs

12.

Until 1781 scientists thought there were only six planets in the solar system. Then a scientist called Herschel looked through a very large telescope that could turn to follow objects in space. He watched a bright object in the night sky for a few months and made drawings of what he saw. He concluded it was a planet.



What method did Herschel use to discover the new planet?

- A) He carried out practical tests in the laboratory
- B) He asked scientists' opinions
- C) He observed the environment
- D) He gathered data from books

13.

A diagram shows a measuring instrument.



Which quantity is this instrument used to measure?

- A) Mass
- B) Length
- C) Area
- D) Volume

14.

What is the technique used to separate salt in seawater?

- A) Sublimation
- B) Using evaporation
- C) Filtration
- D) Using a magnet

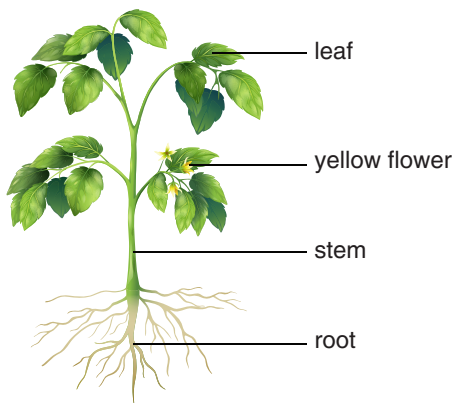
15.

How can we save energy at home?

- A) We can keep the house warmer and open the windows.
- B) We can turn on unnecessary lights.
- C) We can use energy-saving light bulbs.
- D) We can take longer showers.

16.

Basic parts of most all plants are roots, stems, leaves, and flowers as shown in the figure below.



Which part transports water and nutrients to different plant parts?

- A) Flower
- B) Leaves
- C) Stem
- D) Roots

17.

Some energy resources are listed below.

- Petroleum
- Coal
- Wind
- Natural gas

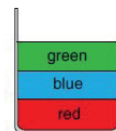
Which energy resource is not a fossil fuel?

- A) Natural gas
- B) Petroleum
- C) Coal
- D) Wind

18.

The order in which liquids are put into the container

Order	colored liquid
1	red
2	green
3	blue



The sorting that occurs in the container after a while

Three separate liquids that do not mix with each other are taken in equal volumes and placed in a transparent container in the order given in the table. After a while, the above image appears inside the container.

Accordingly, how many of the following ideas is/are correct?

- I. Between the blue and red liquids of equal volumes, blue has less mass than red.
- II. If the liquids were put into the container in different order, the liquid order that would occur in the container after a while would be the same.
- III. Between the green and blue liquids of equal masses, the volume of green is greater than the volume of blue.
- IV. The order of the densities of these liquids from less to more is green-blue-red.

- A) 4 B) 3 C) 2 D) 1

19.

What causes the seasons during the year?

- A) The moon and tides.
- B) The Sun and orbit.
- C) The tilting of the Earth's axis.
- D) The distance between the Earth and the Sun.

20.



Farmer Franz cannot install an air conditioning system in his orange storage warehouse due to financial difficulties. Franz is able to protect his oranges from freezing in winter and rotting in summer with the water-filled containers he puts in his warehouse.

Accordingly, which of the following ideas explains Franz's method best?

I. The heat released during the evaporation of the water ensures the cooling of the environment in summer.

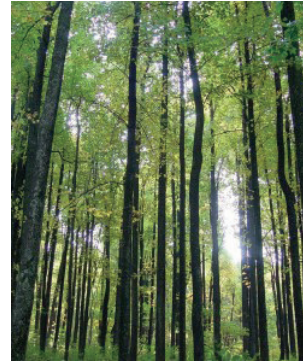
II. Water evaporates at any temperature. As the water vapor turns back into the liquid state, it gives some heat to the environment. The heat given increases the temperature of the environment.

III. The heat released during the freezing of the water in winter increases the temperature of the environment.

- A) Only II
- B) I and II
- C) II and III
- D) I, II and III

21.

Why are park areas with lots of trees or forested areas cooler than city centers in summer?



I. As a result of the shade created by the leaves of the trees, the air temperature is lower.

II. Trees that make photosynthesis during the day reduce the greenhouse effect and cool the environment.

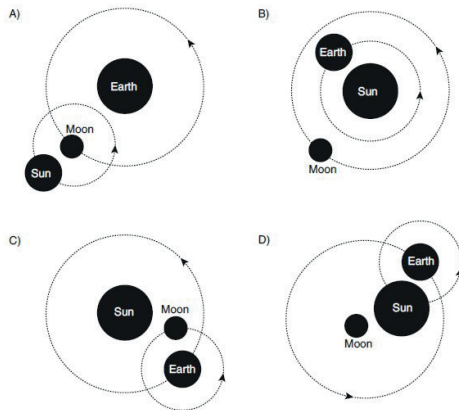
III. As trees absorb a significant amount of sunlight, the amount of hot rays is reduced.

IV. The water lost in the form of vapor from the leaves of the tree decreases the temperature of the air around the tree.

- A) II and III
- B) I, II and IV
- C) II, III and IV
- D) I, II, III and IV

22.

Which of the models showing the movements of the Sun, Earth and Moon with respect to each other has been drawn correctly?



23.



Eskimos living in areas close to the poles make igloos to protect them from the cold. Igloos are made of snow blocks with air trapped inside them. Even if the outside temperature is -45°C , the temperature inside the igloo is $+4$ degrees.

What could be the reason for so much difference in temperature between the inside and outside of Eskimo houses?

- A) Solids conduct heat better than gases.
- B) The heat conduction of still air is lower than the heat conduction of solids.
- C) As the space between the particles forming the substance increases, the thermal insulation decreases.
- D) White colored snow blocks reflect sunlight.

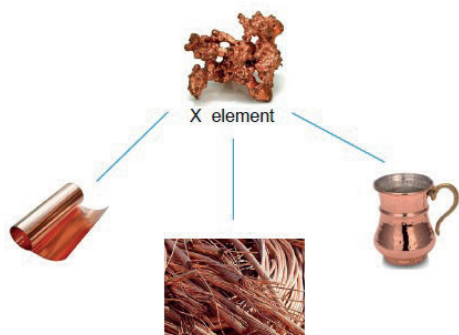
24.



Which of the following is an environmental issue caused by human activities?

- A) Volcanic eruptions
- B) Solar flares
- C) Deforestation
- D) Earthquakes

25.



The element X can be processed and transformed into the above materials.

Which of the following about element X is wrong?

- A) It conducts electricity well.
- B) It is a good heat insulator.
- C) It can be made into wire and plate.
- D) It is bright.

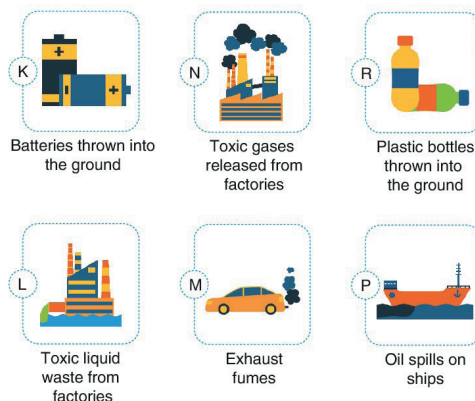
26.



Which of the following is wrong about the dam pictured above?

- A) Electricity is produced by using the motion energy of water.
- B) Electricity is produced in renewable ways.
- C) It is an environmentally friendly power plant.
- D) It is considered in the same group as thermal power plants in terms of methods used in electricity generation.

27.



Which of the above pollution factors primarily affect the habitats of fish?

- A) K - N - L
- B) L - P
- C) M - N
- D) R - P - K

28.



As the weather gets colder, people use antifreeze in their car engines. Antifreeze helps protect the engine's cooling system from freezing in winter and prevents the engine from overheating in hot regions during the summer.

Which of the following pieces of information is wrong?

- A) Antifreezes increase the boiling point of the liquid and allow for a higher coolant temperature.
- B) It prevents the engine from overheating and makes the engine last longer.
- C) Solutions freeze at a lower temperature than the pure form of the solvent.
- D) It decreases the freezing point of the engine cooling water and prevents the engine from being damaged in cold seasons.

29.



What is climate change?

- A) A natural process that occurs in cycles
- B) A gradual increase in the Earth's temperature due to human activities
- C) A sudden change in the Earth's climate caused by natural disasters
- D) A change in the weather patterns that occurs only in the polar regions.

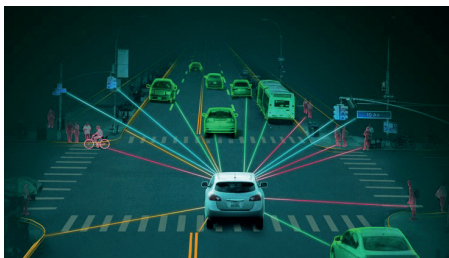
30.



Which of the following statements is true about electric cars?

- A) They run on gasoline
- B) They emit more CO₂ than gasoline-powered cars
- C) They require longer charging time than refueling time for gasoline-powered cars
- D) They are less energy-efficient than gasoline-powered cars

31.



What is one potential advantage of autonomous cars?

- A) They have the potential to reduce traffic congestion
- B) They may offer a cost advantage compared to traditional cars
- C) They could be easier to maintain than traditional cars
- D) They might provide a different driving experience compared to traditional cars

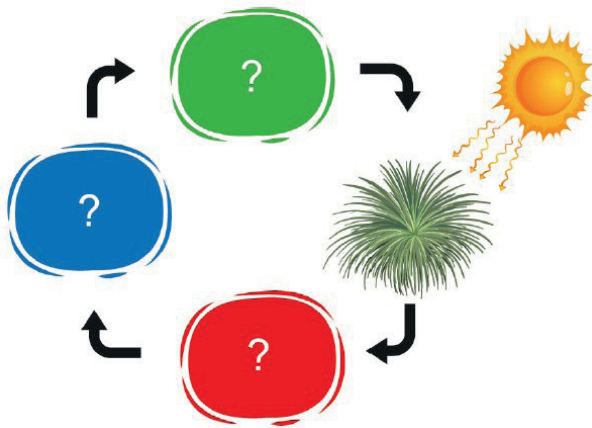
32.



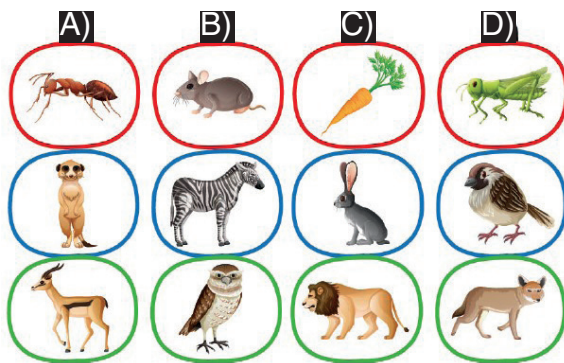
What is artificial intelligence?

- A) The study of the natural world and its phenomena
- B) The science of creating machines that can perform tasks that typically require human intelligence
- C) The study of the structure, behavior, and interactions of natural systems
- D) The branch of science that deals with the properties, composition, and structure of matter

38.



Considering the nutrition chain above, which group of living things match correctly in the red, blue and green spaces?



37.

Lions only eat buffalo, zebras, antelopes and crocodiles. Elephants only eat leaves, fruits, nuts and grass.

	Animals	describing word
1	lion	a herbivore
		b carnivore
2	elephants	c producer
		d prey

Which of the following matches is correct?

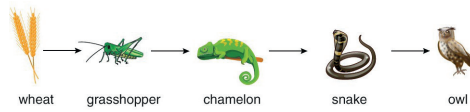
- A) 1-c, 2-b B) 1-b, 2-a
C) 1-d, 2-c D) 1-a, 2-d

36.

People who dig holes in the road need a lot of energy in their food because:

- A) they have long tea breaks.
B) they always forget their sandwiches.
C) they sometimes have to work in the rain.
D) they use a lot of energy while they work.

39.



One of the food chains observed in the town of Neubeuern in Munich is the food chain given below.

Leon: Let's hunt down all the owls in Neubeuern and its surroundings.

Tom: Let's catch the snakes carefully and deport them from our town in cloth bags.

Veterinarian: Let's protect their nests to increase the number of chameleons.

Katrin: Let's fight grasshoppers with appropriate pesticides.

Accordingly, which of the above suggestions would lead to a higher wheat harvest in Neubeuern and its surroundings than in previous years?

- A) Tom and Veterinarian
- B) Leon and Katrin
- C) Veterinarian and Katrin
- D) Veterinarian, Tom and Katrin

40.



There are some plants in the world that have a special nutritional status. One of them is insect-eating (Insectivorous) plants. These plants supplement their mineral needs by catching and consuming insects.

Which of the following statements about insect-eating plants is incorrect?

- A) They meet their nitrogen needs from the insects they catch.
- B) They live in soils poor in nitrogen minerals.
- C) They possess specialized structures to capture insects.
- D) They obtain their nutrients through photosynthesis.