

# SMETA SCIENCE OLYMPIAD

SAMPLE PAPER  
GRADE 5-6



**Q1. Scientists are experimenting with a newly discovered single-celled organism. While observing it under a microscope, they remove its mitochondria.**

**What do you predict will happen to this cell?**

- A) It will become stronger because mitochondria use too much energy
- B) It will stop producing energy and eventually die
- C) It will turn into a plant cell because it no longer has mitochondria
- D) It will divide faster since there is less material inside

Answer: B) It will stop producing energy and eventually die



**Q2. Scientists observed that in a certain area, bees suddenly disappeared. Over the next few years, they noticed that some plants stopped producing fruits and seeds.**

**Why did this happen?**

- A) The plants stopped growing because bees eat their leaves
- B) Bees pollinate flowers, and without them, some plants cannot reproduce
- C) Bees produce oxygen for the plants to grow
- D) Plants produce nectar only when bees are present

Answer: B) Bees pollinate flowers, and without them, some plants cannot reproduce

**Q3. In an island ecosystem, snakes eat rabbits, and rabbits eat grass. A disease kills all the snakes.**

**What is the most likely effect of this on the ecosystem?**

- A) The rabbit population will increase, and they will eat all the grass
- B) The grass will grow taller because rabbits will stop eating it
- C) The rabbits will become predators and start eating smaller animals
- D) The ecosystem will remain the same

Answer: A) The rabbit population will increase, and they will eat all the grass

**Q4. A scientist shaves off a polar bear's white fur and observes its skin is black underneath.**

**How does having black skin help the polar bear survive in the Arctic?**

- A) The black skin absorbs more heat from the sun, keeping the bear warm
- B) The black skin helps the bear hide in the snow
- C) The black skin reflects sunlight away
- D) The black skin helps the bear swim better

Answer: A) The black skin absorbs more heat from the sun, keeping the bear warm



**Q5. A scientist is studying a rare medical condition in which a patient's body fails to remove toxic waste from their blood, leading to severe swelling and poisoning. After multiple tests, the scientist finds that one organ is not functioning properly, causing waste to build up in the body.**

**Which organ is most likely responsible for this condition, and what is its primary function?**

- A) Liver
- B) Kidneys
- C) Lungs
- D) Pancreas

Answer:

- B) Kidneys

**Q6. A doctor is treating a patient who has difficulty breathing, extreme fatigue, and low energy levels. After running tests, the doctor finds that the patient's body is unable to transport enough oxygen to cells, even though the lungs are working properly.**

**Which organ system is most likely failing, and why?**

- A) Digestive System – It is not breaking down food properly
- B) Nervous System – The brain is not sending the right signals
- C) Circulatory System – The heart is not pumping oxygen-rich blood efficiently
- D) Excretory System – The kidneys are not filtering waste properly

Answer:

- C) Circulatory System – The heart is not pumping oxygen-rich blood efficiently

**Q7. People use almond trees for food. We usually eat the part of this plant that can grow into a new plant.**

**Which part of the almond tree do we usually eat?**

- A) The fruit
- B) The stem
- C) The seeds
- D) The leaf

Answer:

- C) The seeds



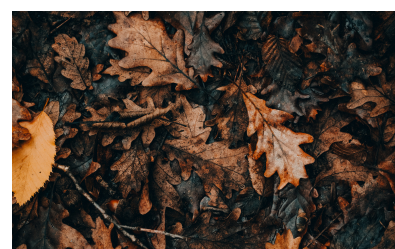
**Q8. In a forest, trees drop their leaves in autumn. Over time, the fallen leaves disappear as they break down.**

**Which group of organisms is most responsible for this process, and why is it important?**

- A) Herbivores
- B) Decomposers
- C) Carnivores
- D) Producers

Answer:

- B) Decomposers



**Q9. An element is a pure substance made of only one type of atom. A compound, on the other hand, is made of two or more different elements chemically combined.**

**Which of the following is an example of a compound?**

- A) Oxygen ( $O_2$ )
- B) Gold (Au)
- C) Water ( $H_2O$ )
- D) Hydrogen ( $H_2$ )

Answer:

- C) Water ( $H_2O$ )

**Q10. A scientist removes all electrons from an atom.**

**How will this change the atom?**

- A) The atom will become neutral.
- B) The atom will become negatively charged.
- C) The atom will become positively charged.
- D) The atom will turn into a molecule.

Answer:

- C) The atom will become positively charged.

**Q11. A student burns a piece of wood. After the fire, she notices that the wood is gone, and only ash remains.**

**She wonders: Did the matter disappear?**

**Which scientific explanation is correct?**

- A) Yes, matter disappeared because it was burned.
- B) No, matter was converted into gases, smoke, and ash.
- C) Some matter disappeared, but some remained in the ash.
- D) Matter can disappear if the temperature is high enough.

Answer:

- B) No, matter was converted into gases, smoke, and ash.



**Q12. A ball is dropped from a tall building. As it falls, its speed keeps increasing.**

**Why does this happen?**

- A) Gravity causes the ball to accelerate downward.
- B) The ball gains energy from the air.
- C) The ball moves faster because the wind pushes it down.
- D) The ball stops accelerating once it starts moving.

Answer:

- A) Gravity causes the ball to accelerate downward.

**Q13. Sara and her family visit the beach early in the morning. She notices that the water level is very low. However, when they return in the evening, the water level is much higher.**

**What is the cause of this change in water level?**

- A) The wind pushes the ocean water toward the shore.
- B) The moon's gravity pulls the ocean water, creating tides.
- C) The sun heats the ocean, making the water expand.
- D) Earth's rotation causes water to move randomly.

Explain how the moon influences tides on Earth.

Answer:

- B) The moon's gravity pulls the ocean water, creating tides.

**Q14. A child is playing with a toy car. When she pushes the car, it starts moving. After she stops pushing, the car eventually stops.**

**Why does the toy car stop moving?**

- A) There is no more force acting on it.
- B) Friction between the car and the floor slows it down.
- C) The car loses energy over time.
- D) The air around the car absorbs its energy.

Answer:

- B) Friction between the car and the floor slows it down.



**Q15. A scientist is testing different materials to see if they conduct electricity. She places a metal rod, a piece of rubber, and a wooden stick into a circuit one at a time.**

**Which material will allow electricity to flow?**

- A) Rubber
- B) Wood
- C) Metal
- D) None of them

Answer:

- C) Metal

**Q16. Ali was excited to see the full moon. He saw it shining brightly in the sky one night. However, when he looked again a few days later, the moon was only half visible.**

**What could be the reason for this change?**

- A) The moon is moving away from Earth.
- B) The Earth's shadow is covering half of the moon.
- C) The moon is orbiting Earth, and we see different parts of the sunlit side.
- D) Clouds are blocking half of the moon.

Answer:

- C) The moon is orbiting Earth, and we see different parts of the sunlit side.



**Q17. A scientist discovers a new planet in space. At night, the sky above the planet is filled with bright clusters of stars, similar to what we see in the Milky Way.**

**What does this tell us about the planet's location?**

- A) It is inside a galaxy, just like Earth.
- B) It is outside any galaxy and floating alone in space.
- C) It is inside a black hole.
- D) It is inside the moon's orbit.

Answer:

- A) It is inside a galaxy, just like Earth.



**Q18. Imagine Earth did not tilt on its axis and instead stood straight up while orbiting the sun.**

**How would this change the way seasons occur?**

- A) There would be no seasons, and every place would have the same weather all year.
- B) Only the North and South Poles would have seasons.
- C) Summer and winter would happen every week instead of yearly.
- D) Earth would spin in the opposite direction, reversing the seasons.

Answer:

- A) There would be no seasons, and every place would have the same weather all year.

**Q19. A hiker notices that a mountain is getting smaller over time. Small rocks and soil are washing away whenever it rains. What natural process is causing this change?**

- A) Earthquakes
- B) Erosion
- C) Volcanic eruptions
- D) Glaciers growing

Answer:

- B) Erosion



**Q20. A metamorphic rock is buried deep underground. Over millions of years, it melts into magma and then cools down.**

**What type of rock does it become after cooling?**

- A) Metamorphic Rock
- B) Igneous Rock
- C) Sedimentary Rock
- D) Fossilized Rock

Answer:

- B) Igneous Rock



**Q21. A student builds a circuit with a battery, a switch, and a bulb. However, the bulb does not light up.**

**Which of the following could be the problem?**

- A) The battery is dead.
- B) The wires are not connected properly.
- C) The bulb is broken.
- D) All of the above.

Answer: D) All of the above.



**Q22. A famous limestone statue that has stood outside for 200 years is slowly wearing away due to acid rain. What is happening to the minerals in the limestone?**

- A) They are dissolving due to a chemical reaction with acid rain.
- B) They are breaking apart because of earthquakes.
- C) They are turning into metal due to high heat.
- D) They are getting stronger over time.

Answer:

- A) They are dissolving due to a chemical reaction with acid rain.



**Q23. Emily wants to test whether adding salt to water will help an egg float.**

**She sets up three glasses:**

- **Glass 1: Plain water**
- **Glass 2: Water with one spoon of salt**
- **Glass 3: Water with three spoons of salt**

**Which of the following statements best describes what will happen?**

- A) The egg will sink in all three glasses.
- B) The egg will float only in the plain water.
- C) The egg will float higher as more salt is added.
- D) The egg will dissolve in the salty water.

Answer: C) The egg will float higher as more salt is added.

**Q24. A scientist has four colorless liquids:**

- **Water**
- **Vinegar**
- **Saltwater**
- **Soap water**

**She is allowed to observe, smell, and test (safely) but not label the cups.**

**Which of the following tests would best identify each liquid?**

- A) Smell test – Vinegar has a strong odor
- B) Bubble test – Soap water will create bubbles when shaken
- C) Dissolving test – Saltwater leaves salt crystals when evaporated
- D) All of the above

Answer: D) All of the above

**Q25. A student fills a plastic bottle with hot water and quickly closes the lid. After a few minutes, the bottle starts to shrink and collapse on its own.**

**Why does this happen?**

- A) The plastic melts from the hot water.
- B) The air inside cools, creating lower pressure inside the bottle.
- C) The bottle absorbs the water and changes shape.
- D) The bottle is too weak to hold water.

Answer: B) The air inside cools, creating lower pressure inside the bottle.

