INTERNATIONAL OLYMPIAD ACADEMY
CSAR Learning Solutions Pvt. Ltd. initiative

SAMPLE PAPER
2025-26

GRADE – 5 & 6
CATEGORY: DARWIN

CSAR INTERNATIONAL SCIENCE OLYMPIAD

Basic: (3 Points)

1. Sarah sees her face clearly in a calm pond, but not in choppy water. What property of light explains why a smooth surface shows a clear image?

(A) Light speeds up

(B) Light bends

(C) Light disappears

(D) Light reflects evenly

(E) Light scatters

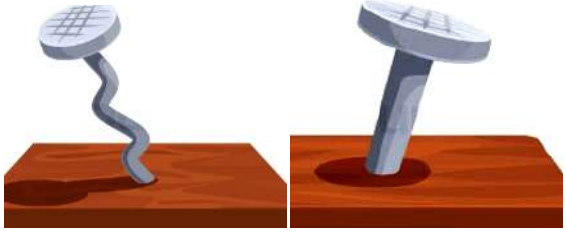
2. Aryan loves baking cookies. He notices that once the soft dough is baked, it turns into a solid cookie and can't be changed back. What type of change has occurred in this tasty experiment?

(A) State change (B) Mixing change

(C) Chemical change (D) Physical change

(E) Reversible change

3. Riya notices that a sharp nail goes into wood more easily than a blunt one, even when she uses the same hammer force. What explains this difference?



(A) Higher pressure (B) Stronger material (C) Less friction

(D) More force (E) Lower density

4. A student accidentally mixes iron filings with sawdust in a beaker. She wants to separate them quickly using a simple method. Which property difference will help her most?

(A) Density difference (B) Magnetic property

(C) Size difference (D) Boiling point

(E) Color difference

5. Two toy cars start at the same time. Car A travels 60 cm in 10 seconds. Car B travels twice the distance of Car A in half the time. What is the speed of Car B?

(A) 12 cm/s (B) 60 cm/s (C) 6 cm/s (D) 10 cm/s (E) 20 cm/s

6. Meena is recovering from an injury and her doctor says she should eat foods that help rebuild muscles and repair tissues. Which component in food should be included more in her meals?

(A) Sugars (B) Proteins (C) Water (D) Vitamins (E) Fats

7. In the desert, Arjun observes that camels can survive for days without food or water. Their hump stores fat, and they don't need to drink often. What major challenge does this adaptation help them face?

(A) Running fast (B) Finding mates

(C) Surviving without food/water (D) Hiding from enemies (E) Staying cool

8. Karan forgets to turn off his 10-watt study lamp. It stays on for 2 minutes. How much electrical energy does the lamp use during this time?

(A) 2000 J

(B) 120 J

(C) 20 J

(D) 1200 J

(E) 600 J

9. While making a fizzy drink, Tanvi mixes baking soda with lemon juice and notices bubbles forming instantly. What does this observation tell us about the type of change taking place?

(A) The liquids are dissolving

(B) It's a physical change

(C) A new gas is forming

(D) The mixture is cooling down

(E) It's a reversible change

10. Rishi notices that squirrels gather and hide nuts during the autumn season. What is the main reason behind this behavior?

(A) To play games

(B) To attract a mate

(C) To mark their territory

(D) To build a nest

(E) To have food for winter

Foundation: (4 Points)

11. During movie night, Arjun heats corn kernels in a pan. After a few minutes, he notices loud popping sounds and sees the kernels turn into soft, fluffy popcorn. He tries to turn them back into kernels but fails.

Which of the following best explains the type of change that has taken place?

(A) It’s a physical change because the popcorn looks different

(B) It’s a reversible change since it was caused by heat

(C) It’s a change of state from solid to gas

(D) It’s a mixing change because air entered the popcorn

(E) It’s a chemical change because new substances were formed

12. After being transplanted, a plant shows drooping leaves and weak stems within hours, even though sunlight is available. Which of the following is the most likely reason for this change in its condition?

(A) Its leaves can no longer trap sunlight

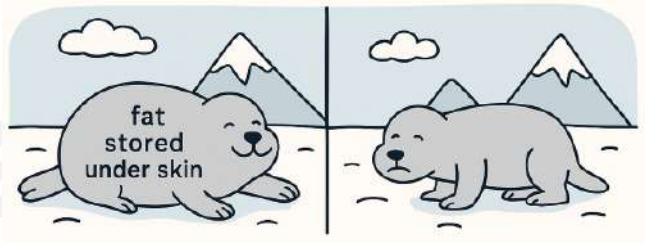
(B) Its roots are unable to pull in water

(C) It is producing too much oxygen

(D) Its stems are bending toward light

(E) Its flowers are losing their color

13. Two animals live in cold regions: one stores large amounts of fat under its skin, while the other does not. Over a long winter without food, only the fat-storing animal survives. What does this suggest about the role of fat in such environments?



(A) Fat helps in digesting food faster

(B) Fat keeps the animal awake

(C) Fat stores energy and helps retain heat

(D) Fat improves hunting skills in cold

(E) Fat strengthens bones and muscles

14. A ball is thrown straight up into the air. Ignoring air resistance, what happens to the ball's speed as it goes up, reaches its highest point, and then comes back down?

(A) Decreases, then stops, then increases

(B) Increases, then stops, then decreases

(C) Stays constant, then decreases, then increases

(D) Decreases, then increases, then stays constant

(E) Increases, then stays constant, then decreases

15. Ravi stands in a valley surrounded by steep slopes and speaks softly. Instead of a distinct echo, he notices his voice sounds prolonged and overlaps slightly. Which wave behavior is most likely responsible for this kind of auditory effect?

(A) Diffraction of sound waves

(B) Refraction through air layers

(C) Multiple reflections causing reverberation

(D) Scattering of sound in moist air

(E) Attenuation of wave amplitude over distance

16. A slice of apple is left on a plate for some time. After a while, its surface turns brown, even though no heat is applied. This browning is due to a reaction between oxygen and enzymes in the apple. What type of change does this best represent?

(A) Irreversible enzymatic change forming a new product

(B) Physical absorption of gases causing discoloration

(C) Phase change due to surface dehydration

(D) Mechanical exposure to light altering pigments

(E) Reversible blending of apple and air particles

17. Nila notices three separate bins at her school canteen—blue, green, and red. She sees students placing plastic wrappers in the blue bin, fruit peels in the green one, and paper tissues in the red one.

If her friend throws everything into one bin, what long-term problem might this create?

(A) The bins might break due to weight

(B) It will delay garbage truck arrival

(C) It will make waste separation difficult for recycling

(D) It will reduce the number of dustbins needed

(E) It will help pests sort the waste naturally

18. You are in a dark room with two identical light bulbs placed far apart. If you hold a small, opaque ball between these two bulbs and a wall, how many shadows will you see on the wall, and what will they look like?

(A) One dark shadow

(B) Two dark shadows

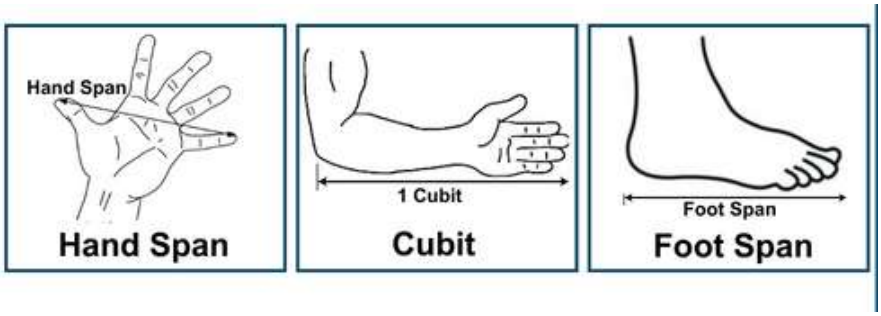
(C) One light and one dark shadow

(D) Two shadows, one darker than the other

(E) No shadows

19. Long ago, people used hand spans or foot lengths to measure distances. Today, standard measuring tapes marked in centimeters and meters are commonly used.

Which of the following best explains the advantage of using standard units of measurement?



(A) It is faster to use a tape

(B) Tapes are always made of plastic

(C) Everyone's hand span is different

(D) Tapes can measure curves

(E) Tapes are heavier than hands

20.

Column A (Adaptations of a fish)	Column B (Purpose of adaptation)
1. Streamlined body	(A) Helps in breathing underwater
2. Fins	(B) Helps in fast movement through water
3. Gills	(C) Keeps body warm in cold water
4. Scales	(D) Protects from predators
5. Slippery skin	(E) Reduces friction while swimming

(A) 1 → B, 2 → A, 3 → E, 4 → D, 5 → C

(B) 1 → B, 2 → D, 3 → A, 4 → E, 5 → C

(C) 1 → B, 2 → B, 3 → A, 4 → D, 5 → E

(D) 1 → A, 2 → C, 3 → D, 4 → B, 5 → E

(E) 1 → D, 2 → E, 3 → A, 4 → B, 5 → C

Exploration: (5 Points)

21. A train travels a total distance of 360 km from Station A to Station C, with a stop at an intermediate Station B.

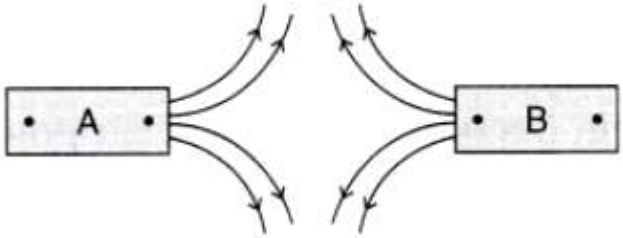
- From A to B (180 km), the train travels at 60 km/h.
- It stops for 15 minutes at Station B before continuing.

To maintain an overall average speed of 90 km/h (including the stop), what must be the minimum average speed of the train from Station B to C (the next 180 km)?

(A) 90 km/h (B) 108 km/h (C) 240 km/h (D) 135 km/h

(E) 150 km/h

22. Magnet A is fixed to the table. You slowly bring the left end of Magnet B near the left end of Magnet A and they push away strongly. Then you flip only Magnet B**,** keeping Magnet A unchanged. Now you bring the right end of Magnet B near the left end of Magnet A**.**



Which of the following is most likely true?

(A) They pull toward each other.

(B) They still push each other away.

(C) They break into smaller magnets.

(D) They both lose magnetism.

(E) They stay still, no movement.

23. Yazh inflated a balloon fully and tied its mouth. She left it in a cool room overnight. By morning, the balloon had become slightly smaller and less firm. She repeated the process, but this time kept the balloon near a heater. It expanded and became very tight.

Which conclusion best explains both observations about air?

(A) Heating removes water vapour from the balloon.

(B) Cold air becomes heavier and falls out.

(C) Air takes up space and expands when heated.

(D) Air is invisible and disappears over time.

(E) The balloon material becomes tighter with heat.

24. **Assertion (A):** Cotton fabrics exhibit a coarse texture and show high water absorption due to their porous and hydrophilic structure, while polyester remains relatively dry and smooth after exposure to water.

Reason (R): Cotton, being a plant-based cellulose fiber, contains hydroxyl groups that attract water molecules. In contrast, polyester is a petroleum-based polymer with low affinity for moisture due to its non-polar nature.

Choose the correct option:

(A) Both A and R are true, but R is not the correct explanation of A

(B) Both A and R are true, and R is the correct explanation of A

(C) A is true, but R is false

(D) A is false, but R is true

(E) Both A and R are false

25. At an amusement park, two children experience different rides. One sits on a merry-go-round**,** which rotates smoothly in a fixed circular path. The other is on a roller coaster, which moves along steep tracks, climbs up, drops down, and turns sharply.

Based on their paths, what type of motion does the child on the merry-go-round experience, and how does it differ from the roller coaster's motion?

(A) Irregular motion with unpredictable changes

(B) Back-and-forth motion along a straight line

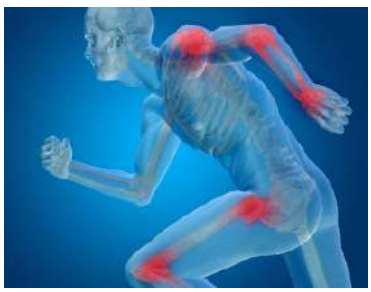
(C) Circular motion that is smooth and repeating

(D) Linear motion that never curves or loops

(E) Fast motion with random directions and speed

26. A student observes that while turning the head from side to side, the neck allows rotational movement. However, when bending the arm at the elbow, the movement is limited to back-and-forth motion.

Based on this observation, which of the following joints enables such restricted movement at the elbow, and why is this joint structurally suited for it?



(A) Ball-and-socket joint – allows movement in all directions

(B) Pivot joint – allows rotation around a single axis

(C) Hinge joint – permits movement in one plane like a door

(D) Gliding joint – allows bones to slide over one another

(E) Fixed joint – does not allow movement at all

27. A vegetarian athlete is preparing for a sports championship and needs a diet rich in plant-based protein to aid in muscle recovery and tissue repair. After consulting a nutritionist, five meal plans were prepared focusing on different food combinations. Considering the need for high-protein content along with essential amino acids, which food group should be prioritized?

(A) Juicy fruits and leafy greens

(B) Whole grains and cereals

(C) Starchy roots and tubers

(D) Natural sugars and oils

(E) Pulses, legumes, soy products, and seeds

28. A scientist observes a closed terrarium where green plants thrive without any external air supply. She explains that inside, the plants use carbon dioxide and water to synthesize glucose and release a by-product that supports continued respiration.

Given this, consider the reaction: $\mathbf{CO_2 + H_2O \rightarrow C_6H_{12}O_6 + O_2}$ (unbalanced).

To model the reaction accurately, what should be the smallest coefficient for O_2 when the equation is balanced using whole numbers?

(A) 1 (B) 2 (C) 4 (D) 6 (E) 5

29. A freely suspended magnetic compass initially aligns with Earth's magnetic field. When a bar magnet is brought close, the needle deflects from its original direction. What does this indicate about magnetic interactions in the surrounding region?

(A) Compass responds to electric fields nearby

(B) Bar magnet cancels Earth's magnetic pull

(C) Compass stops working due to interference

(D) Magnet pushes needle away from North

(E) Magnetic field lines change around compass

30. A newly discovered plant species exhibits several unique features: it has very deep roots that spread widely, its leaves are small and needle-like with a thick waxy coating, and it can store a significant amount of water in its stem. Based on these combined adaptations, in which of the following environments would this plant species be most ideally suited to survive and thrive?

(A) A tropical rainforest, characterized by high humidity and consistent rainfall.

(B) A temperate forest, experiencing four distinct seasons with moderate rainfall.

(C) A hot, arid desert, with infrequent rainfall and extreme temperature variations.

(D) A wetland area, where the soil is constantly saturated with water.

(E) An alpine tundra, with very cold temperatures and frozen ground for much of the year.

❑❑❑

ANSWER KEY

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