

2021 PSLE SCIENCE (ANSWER KEY)

Section A (2 marks each)

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|--------|---------|---------|---------|
| 1. (4) | 8. (4) | 15. (3) | 22. (3) |
| 2. (4) | 9. (1) | 16. (3) | 23. (4) |
| 3. (1) | 10. (2) | 17. (2) | 24. (2) |
| 4. (1) | 11. (2) | 18. (1) | 25. (2) |
| 5. (4) | 12. (1) | 19. (3) | 26. (1) |
| 6. (3) | 13. (4) | 20. (2) | 27. (4) |
| 7. (3) | 14. (4) | 21. (2) | 28. (2) |

Section B

29. (a) heart and lungs [1m each]
(b) to allow space for the lungs to expand
30. (a) There is less light in winter so rate of photosynthesis decreases [1m], by shedding the tree can conserve energy and water. [1m]
(b) No, they do not bear flowers in winter. Fruits develop from flowers.
31. (a) The starch solution in the bag turns blue [1m] but the water in the beaker remain brown.[1m]
(b) Cell membrane
32. (a) Time taken for all the ice to melt completely.
(b) location of set-ups / temperature of surrounding air / size, thickness of container.
(c) X. Since the ice took a longer time to melt completely, X is a poorer conductor of heat than Y [1m]. Thus, when X is used to make the container, the curry will lose heat to the surroundings and cool down slower [1m].
33. (a) When he was lifting the dumbbells, he will breathe in the surrounding air ($\frac{1}{2}$) and the air will be sent to the lungs. During gaseous exchange at the lungs ($\frac{1}{2}$), oxygen is absorbed ($\frac{1}{2}$) into the blood and the oxygen-rich blood is sent back to the heart. The heart then pumps the oxygen-rich blood to the arms ($\frac{1}{2}$).
(b) Choose any two, ($\frac{1}{2}$ m each): water, digested food, oxygen
34. (a) As the distance from the lamp increases, the water plant will receive less light [1m] and the rate of photosynthesis will decrease. Thus, the water plant will produce less oxygen [1m] and the number of bubbles produced decreases.
(b) When the snails respire, they give out carbon dioxide and there is more carbon dioxide [1m] for the plants to take in, causing the rate of photosynthesis to increase. Thus, the water plant will produce more oxygen [1m] and the number of bubbles produced increases
(c) to ensure that the water plant only receive light from the lamp and not from other light sources.

35. (a) As the number of strips of white paint on the ramps increases, the time taken for marble to reach the bottom of the ramp increases.
 (b) It acts as a control set-up to compare and show that the number of white strips on the ramps affect the time taken for the marble to roll down the ramp.
 (c) frictional force, gravitational force [1m each]

36. (a) The water droplets on Jean's face will gain heat from her body ($\frac{1}{2}$) and evaporate away ($\frac{1}{2}$) as water vapour. As Jean loses heat to the water droplets, she feels cooler.
 (b) **Faster. The mist from the new water bottle has a larger exposed surface area ($\frac{1}{2}$) in contact with Jean's face**, hence the water droplets will gain heat faster from the body and evaporate faster, ($\frac{1}{2}$)
 (c) The presence of wind ($\frac{1}{2}$) increases the rate of evaporation($\frac{1}{2}$) of the water droplets on her face.

37. (a) Friction is acting opposite to the direction of the moving box.
 (b) He needs the additional pushing force to **go against** the gravitational force that is pulling the box down the slope.
 (c) use lubricants/wheels
 (d) friction between the box and the surface of the slope is reduced.

38. (a) All the kinetic energy has been converted to heat energy and sound energy.

(b)

	Point with greatest amount of kinetic energy	Point with greatest amount of potential energy
x		✓
y	✓	
z		

- (c) When the ball is released at a higher position than X, it possesses more gravitational potential energy ($\frac{1}{2}$) which is then converted to more kinetic energy ($\frac{1}{2}$), causing the ball to swing to a higher height compared to Z.

39. (a) Both bulbs will be brighter than 5units. [1m] When the metal lever swings upwards and touches the contact, there will be three batteries connected in series instead to just one. This will result in more current flowing through both bulbs [1m] making both brighter than 5 units.

- (b) Both bulbs will not light up. [1m]. The fused bulbs create an open circuit, not allowing electrical current to flow through. [1m]

40. (a) **elastic spring force**
 (b) (elastic) potential energy → kinetic energy → heat + sound energy
 (c) Put oil/lubricant/water on the wooden board. Pull the rubber band further. Use two rubber bands