Instructions :

1. Each question carries a different score, as indicated at the end of the question.
2. Students must select only the one best answer for each question.

1. The table below describes the characteristics of four living things.

Characteristic	C	D	E	F
Can it make food?	No	No	Yes	No
Does it have four stages in its life cycle?	Yes	No	No	No
Does the young stop feeding during the pupal stage?	Yes	No	No	No
Does the young look like the adult?	No	No	Yes	Yes

Which of the above living things is likely to be frog? (1.25 marks)

1. C
2. D
3. E
4. F

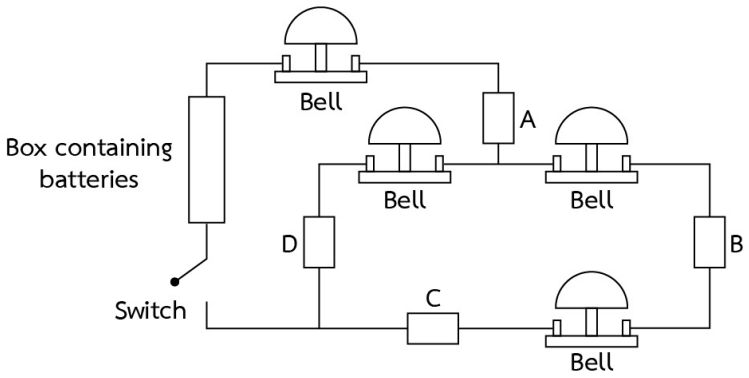
2. An experiment was carried out to determine whether drinking caffeinated soda increases pulse rate. The pulse rates of two groups of people at rest were measured. Group A was then given caffeinated soda and group B was given caffeine-free soda. One hour after drinking the soda, the pulse rates were measured. The participants in the experiment were all the same age, and they were all given the same amount of soda.

The dependent variable in this experiment is the_____. (1.25 marks)

1. type of soda given to each group
2. amount of soda given to each group
3. pulse rate of each group
4. age of participants in each group

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3. Study the diagram shown below. Objects A, B and D in the circuit are conductors of electricity. Only object C is a non-conductor of electricity.



When the switch is closed, how many bell(s) will ring? (1.25 marks)

1. 1
2. 2
3. 3
4. 4

4. Hot air balloons rely on the principle of buoyancy, where heated air inside the balloon is less dense than the cooler ambient air, generating lift. A balloon operator notices that on a hot, muggy day with high humidity, their balloon requires significantly more heating to achieve the same lift as on a dry day with similar temperature. Which of the following best explains this phenomenon. (1.25 marks)

1. Water vapor, being lighter than dry air, reduces the overall density of the air, diminishing the buoyant force on the balloons.

2. The latent heat released during condensation within humid air creates downdrafts, pushing the balloons down.

3. The high humidity increases the effective density of the air, making it harder for the balloons to ascend.

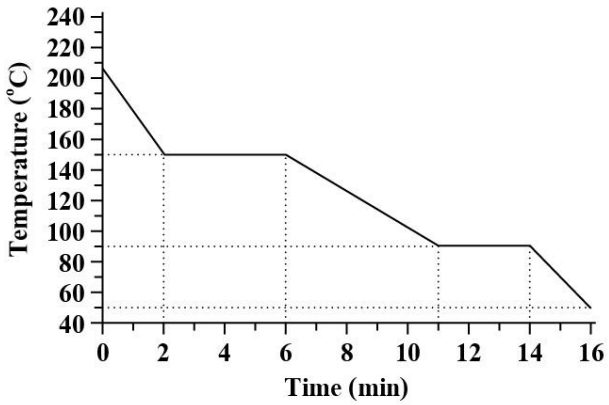
4. Humid air molecules absorb more infrared radiation, causing the balloon fabric to cool down and reduce lift.

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5. Industrial furnaces, used for processes like steel production or glass manufacturing, operate at extremely high temperatures. The interior of these furnaces is lined with specialized ceramic materials known as refractories (e.g., alumina, magnesia, zirconia). These refractory linings are crucial for maintaining the high internal temperatures and protecting the structural integrity of the furnace. Which two material properties are most critical for the effective and safe long-term operation of a furnace refractory lining? (1.25 marks)

1. High thermal conductivity and low specific heat capacity for rapid temperature response.
2. Excellent chemical inertness and high electrical resistivity to prevent short circuits.
3. High melting point and low thermal conductivity, ensuring structural integrity and effective heat containment at extreme temperatures.
4. High compressive strength and high ductility for easy installation.

6. The graph below shows the cooling process of a substance.



Consider the following statements:

A. The melting point of this substance is 90°C.

B. The boiling point of this substance is 140°C.

C. The particles of this sample have the lowest average kinetic energy at 16 minutes.

D. The two phases of the sample at minute 4 are solid and liquid states.

Which statements are correct? (1.25 marks)

1. A and D
2. A and C
3. B and C
4. B and D

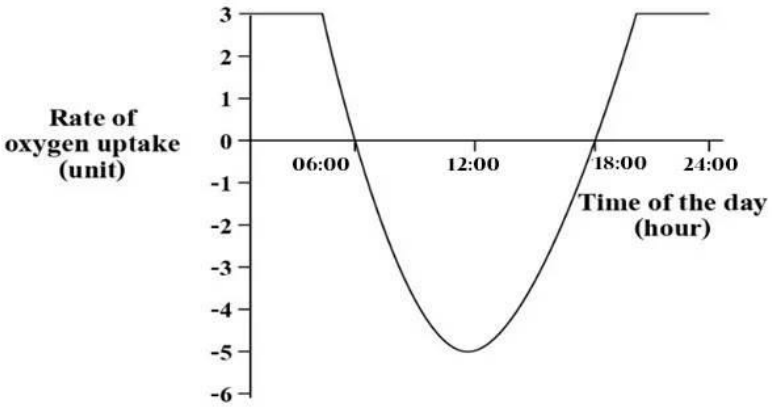
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7. A 10 cm^3 ball of plasticine was placed into a beaker of water and its volume was recorded. The plasticine was then removed from the beaker of water and moulded into a different shape. It was then dropped into the same beaker of water again.

What would the volume of the plasticine be now? (1.25 marks)

1. 5 cm^3
2. 10 cm^3
3. 8 cm^3
4. Unable to specify volume

8. The graph below shows the rate of oxygen uptake of a plant in 24 hours.

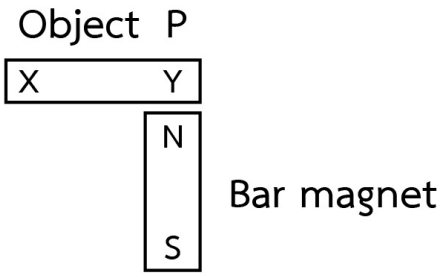


Which of the following correctly describes the plant at 12:00 ? (1.25 marks)

1. It carried out photosynthesis, but not respiration.
2. It carried out photosynthesis at the maximum rate.
3. The rate of photosynthesis was equal to the rate of respiration.
4. The rate of photosynthesis was lower than the rate of respiration.

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9. Elaine wants to find out if object P is a magnet by bringing a bar magnet close to object P as shown.



If object P is magnet, which of the following should be the correct observation one pole of the bar magnet is brought near X and Y? (1.25 marks)

	Bar magnet	X	Y
1.	North pole	No interaction	No interaction
2.	North pole	Attraction	Attraction
3.	South pole	Attraction	Repulsion
4.	South pole	Repulsion	Repulsion

10. Study the classification table below.

Group A	Group B	Group C
Hot coffee Water	Book table	Water vapour Oxygen

Which of the following best represents characteristic group A, group B and group C?
(1.25 marks)

	Group A	Group B	Group C
1.	Solid	Liquid	Gas
2.	Indefinite volume	Definite shape	Definite volume
3.	Indefinite shape	Definite volume	Indefinite volume
4.	Gas	Solid	Liquid

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11. The regions at higher latitudes, which experience significant variations in day length throughout the year (e.g., long summer days and short winter days), locations directly on the "equator" observe approximately 12 hours of daylight and 12 hours of night every single day of the year. This consistent pattern occurs despite Earth 's axial tilt and its orbit around the Sun. Which fundamental aspect of Earth 's rotation and geometry best accounts for this almost unchanging day-night cycle at the equator? (1.25 marks)

1. The equator is always intersected by the terminator (the line between day and night) at a nearly constant angle throughout the year due to Earth 's spherical shape and rotation.

2. The Earth 's elliptical orbit around the Sun means it travels faster at some times, balancing out daylight hours.

3. The Sun 's direct rays always hit the equator perpendicularly, creating equal heating.

4. The Earth 's tilt on its axis is different in the Northern and Southern Hemispheres, causing a variation in daylight hours.

12. A large freshwater lake in a temperate region is home to a diverse ecosystem, including specific species of cold-water fish that thrive in its deep, oxygen-rich waters. A species of fish-eating birds relies heavily on these fish for their survival. Over recent years, due to changing climate patterns, the average summer temperature of the lake water has increased significantly. What is the most likely primary impact of this rising water temperature on the lake ecosystem? (1.25 marks)

1. The amount of dissolved oxygen in the lake water will decrease, stressing or killing the fish, which will then reduce the food source for the birds.

2. The warm water will cause algae to grow less, leading to clearer water and better hunting conditions for the birds.

3. The birds will find new food sources because the fish will simply move to deeper, cooler parts of the lake.

4. The fish population will increase rapidly due to the warmer water, providing more food for the birds.

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13. A group of students wants to test the effectiveness of a DIY water filter they built, hypothesizing that "a water filter using activated carbon and sand will filter muddy water better than a filter using only sand." Which of the following is the most appropriate experimental design to test this hypothesis? (1.25 marks)

1. Test different volumes of muddy water with the same type of filter, then compare the clarity of the filtered water.
2. Use a filter with activated carbon and sand to filter muddy water, then send the filtered water to an expert for quality inspection.
3. Test clean water with both filter types, then observe if any sediment remains.
4. Prepare two equal volumes of muddy water. Filter the first set with a filter containing activated carbon and sand, and the second set with a filter containing only sand. Then measure the clarity of the filtered water.

14. A group of students performed three experiments, carefully noting their observations:

Experiment 1: When a shiny metal strip was placed in a clear liquid, bubbles quickly formed, and the liquid became warmer. The metal strip visibly shrank.

Experiment 2: When a clear gas was strongly cooled, it first turned into a clear liquid, and then solidified into a clear, brittle solid.

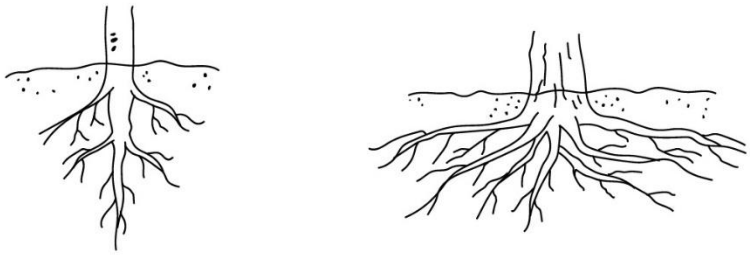
Experiment 3: Two clear, colorless liquids were mixed. Immediately, the mixture began to glow faintly, and solid white particles slowly appeared at the bottom of the container.

Based on these observations, which statement correctly identifies a change? (1.25 marks)

1. All three experiments show only physical changes because no burning or explosions were observed.
2. Experiment 1: This is a chemical change because bubbles were produced and the liquid got warmer, indicating new substances formed and energy was released.
3. Experiment 2: This is a chemical change because the gas changed into a liquid and then a solid, forming new states of matter.
4. Experiment 3: This is a physical change because solid particles appeared, which is just a change in form.

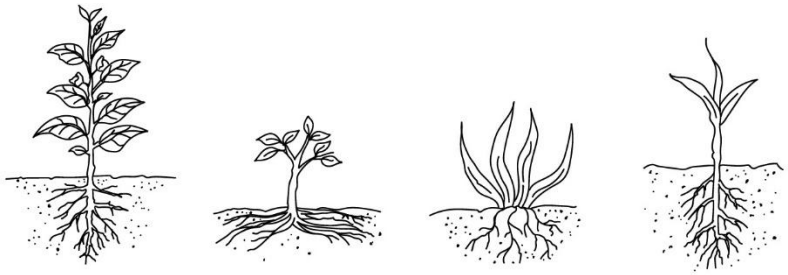
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15. There are two types of root system.



Top root system Fibrous root system

Study the roots of plants A, B, C and D as shown below.



A B C D

Which of the following correctly shows how the roots of these plants are grouped?

(2.5 marks)

	Tap root system	Fibrous root system
1.	A and B	C and D
2.	B and C	A and D
3.	B and D	A and C
4.	A and D	B and C

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16. ASMOPSS decided to investigate which type of fertilizer would make bean plants grow tallest for his science project. He selected 9 bean plant seedlings and divided them into three groups (A, B, and C) of three plants each. His hypothesis was: "Liquid fertilizers will promote faster growth in bean plants compared to granular fertilizers."

Here's how he set up his experiment:

Controlled Variables: All plants received the same amount of water (100 mL daily), were kept in identical pots with the same type of soil, and were placed under the same grow lamp for 12 hours a day. The room temperature was kept constant.

Group A (Control): Received only water.

Group B (Liquid Fertilizer): He dissolved Fertilizer X (a liquid concentrate) in water and carefully sprayed it onto the leaves of these plants every three days. These plants happened to be slightly larger at the start.

Group C (Granular Fertilizer): He mixed Fertilizer Y (granules) into the soil of these plants once a week. These plants happened to be slightly smaller at the start.

After three weeks, He measured the height of all plants:

Group B plants grew significantly taller and had very green leaves.

Group C plants grew a little taller than Group A, but some leaves appeared burnt at the edges.

Group A plants grew steadily but remained the shortest.

ASMOPSS concluded that liquid fertilizers (like Fertilizer X) are much better for bean plant growth than granular fertilizers (like Fertilizer Y) and even make plants grow faster than without any fertilizer.

Based on the principles of designing a fair and valid scientific experiment, what is the most significant flaw in ASMOPSS's experiment that makes his conclusion about fertilizer types unreliable? (2.5 marks)

1. ASMOPSS did not test enough types of fertilizers to make a general conclusion.

2. The way he applied the fertilizers (spraying vs. mixing into soil) was different for each type, creating an uncontrolled variable.

3. Measuring only plant height does not give a complete of plant health or growth.

4. The initial sizes of the plants in each group were not exactly the same, which could affect the final growth measurements.

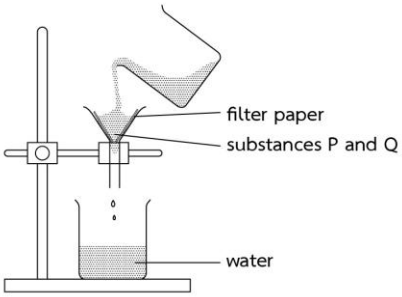
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17. Peter is on a flat grass field. He has a standard football and a small, hard golf ball. He kicks the football and the golf ball with the same force (ignoring air resistance). Why does the football or the golf ball to change its motion more? (e.g. gain more speed or more distance) (2.5 points)



1. The golf ball, because it has much less mass, so the same kick (force) will cause a much greater change in its velocity (acceleration).
2. The golf ball, because it is smaller and therefore experiences less air resistance.
3. The soccer ball, because its larger surface area allows the kick to transfer more energy to it.
4. They will both travel the same distance, because the force of the kick is the same for both.

18. Michael mixed and stirred substances P and Q with water. The mixture was then filtered as shown in the diagram below.



Which of the following is likely to be an **incorrect** conclusion? (2.5 marks)

1. Water is a poor solvent for substances P and Q.
2. Substances P and Q cannot be separated by filtration.
3. Water is the filtrate and substances P and Q form the residue.
4. The pore size of the filter paper is too small to allow substances P and Q to pass through.

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19. A team of engineers is designing a new robotic submersible for deep-sea exploration. One critical internal component, a small sensor housing, needs to operate within a special lubricating oil inside a sealed chamber. This housing must meet three specific physical property requirements:

- It must float within the lubricating oil (which has a density of 0.8 g/cm³).
- It must be very hard to resist wear and tear from constant movement.
- It must not conduct electricity, as it's near sensitive electronics.

The engineers have four prototype materials, each with unique properties:

Material X : Density 0.7 g/cm³, Hardness (Mohs scale) 9, Electrical Conductivity: Very low (insulator).

Material Y : Density 1.2 g/cm³, Hardness (Mohs scale) 9.5, Electrical Conductivity:High (conductor).

Material Z : Density 0.6 g/cm³, Hardness (Mohs scale) 4, Electrical Conductivity: Very low (insulator).

Material W : Density 0.9 g/cm³, Hardness (Mohs scale) 8, Electrical Conductivity:Very low (insulator).

Which material should the engineers choose as the best fit, and why? (2.5 marks)

1. Material X : Because its density allows it to float, and it is very hard and does not conduct electricity.
2. Material Y : Because it is the hardest material and conducts electricity, which is useful for sensors.
3. Material Z : Because it has the lowest density, guaranteeing it floats, and it is an electrical insulator.
4. Material W : Because it is very hard and does not conduct electricity, making it safe for electronics.

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20. Alex was experimenting with various magnetic items and materials for his science project. He carefully recorded a series of observations:

Observation 1: Alex held a strong bar magnet (Magnet M) near a small, shiny paperclip.The paperclip immediately jumped towards Magnet M and clung to its end.

Observation 2: Alex took a second identical bar magnet (Magnet N). When he brought the North pole of Magnet N close to one specific end of Magnet M, the two magnets pushed strongly away from each other.

Observation 3: Alex tried using the M magnet to pick up a small, smooth, black solid object, but the object did not move.

Observation 4: Alex suspended a small, lightweight ring (Ring R), made of an unknown material, from a thin thread. When he brought the South pole of Magnet M very close to Ring R, the ring was pushed away from the magnet.

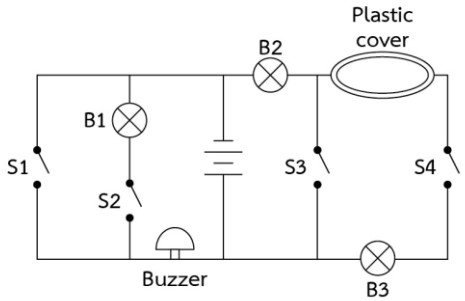
Observation 5: Alex placed a small compass near the middle of Magnet M. The compass needle pointed very weakly, towards the sides of Magnet M, and mostly seemed to point towards the ends of the magnet.

Which conclusion is the most accurate about the properties of the materials and magnets in his experiment? (2.5 marks)

1. Magnet M has only one pole, which is why it repelled Ring R.
2. The black object is a non-magnetic material, and the R ring is likely a permanent magnet.
3. Magnet M has its strongest magnetic force at its center.
4. The paperclip is a permanent magnet, and Ring R is made of a non-magnetic material.

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21. A circuit was set up as shown in the diagram below.



Which of the following would sound the buzzer and light up one bulb only? (2.5 marks)

	Switch S1	Switch S2	Switch S3	Switch S4
A	Open	Open	Close	Open
B	Close	Open	Open	Close
C	Open	Close	Open	Open
D	Close	Open	Close	Close

1. C only
2. A and B only
3. C and D only
4. A, C and D only

22. Astronaut is training on Earth for a mission to the International Space Station (ISS). On Earth, they have a certain mass and a measurable weight. When they reach the ISS, which is orbiting Earth at an altitude where gravity is still about 90% as strong as on the surface, they experience a sensation of **"weightlessness."** How do the astronaut's mass and weight compare when they are on the ISS compared to when they were on Earth, and what causes this difference? (2.5 marks)

1. The astronaut's mass will decrease significantly, while their weight remains constant.
2. The astronaut's mass will remain constant because it is a measure of the amount of matter, but their weight will dramatically decrease to near zero because there is almost no gravitational force pulling on them in orbit.
3. The astronaut's weight will increase due to the absence of air, but their mass will stay the same.
4. Both the astronaut's mass and weight will become zero because there is no gravity in space.

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23. A school is planning to renovate its library to create a more functional and comfortable learning environment.

Reading Area: This section needs maximum natural light to enter so students can read comfortably without eye strain. They want to ensure a clear, unobstructed view of the outside.

Study Carrels: These individual study spaces require diffused light to prevent glare on computer screens and provide a soft, even illumination.

Storage Room for Archival Materials: This room contains old books and historical documents that are very sensitive to light. No light should enter this room from any external source, as exposure could cause irreversible damage.

Which of the following statements correctly identifies the optimal type of light-interacting material for the Reading Area windows, the Study Carrels dividers, and the Storage Room window coverings, respectively? (2.5 marks)

1. Reading Area: Translucent; Study Carrels: Opaque; Storage Room: Transparent
2. Reading Area: Transparent; Study Carrels: Translucent; Storage Room: Opaque
3. Reading Area: Opaque; Study Carrels: Transparent; Storage Room: Translucent
4. Reading Area: Reflective; Study Carrels: Opaque; Storage Room: Transparent

24. Meteorologists often correlate periods of high humidity and impending rain with falling barometric pressure. This relationship is not simply due to the weight of water droplets, but rather a more fundamental property of the air mixture. Which of the following statements best explains why humid air is associated with lower atmospheric pressure, assuming constant temperature? (2.5 marks)

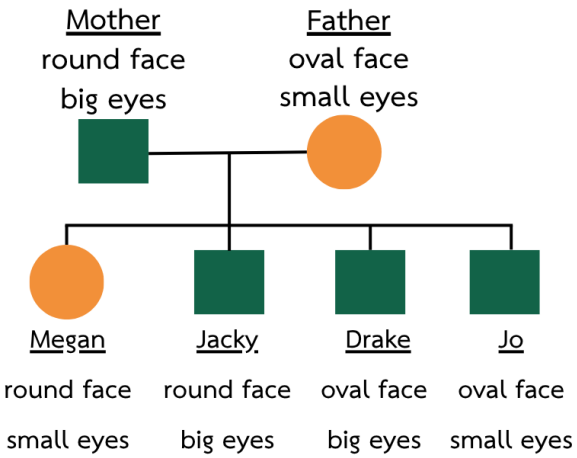
1. The increased number of water molecules in humid air creates more frequent collisions, reducing the overall pressure.
2. High humidity increases the specific heat capacity of air, causing it to cool faster and condense, forming clouds.
3. Water vapor molecules exert a stronger cohesive force, pulling air molecules closer and increasing density, which then lowers pressure.
4. The lower molecular weight of water vapor compared to dry air molecules, leading to reduced overall air density and lower pressure.

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25. A city is implementing a new waste management system focusing on material circularity. They discover that a significant portion of their non-recyclable waste comes from single-use composite materials, such as coffee cups with plastic lining or multi-layer food packaging. What is the primary reason these materials pose a major challenge for traditional recycling processes, and how does this affect resource use? (2.5 marks)

1. They are too heavy for standard recycling machinery to process efficiently.
2. They release toxic chemicals during the recycling process, making them unsafe to handle.
3. They consist of multiple inseparable material types, making them difficult to sort and reprocess into usable raw materials.
4. They are typically made from biodegradable plastics that break down too quickly for recycling.

26. Study the family tree below.



Which children inherited both features from either one of their parents? (2.5 marks)

1. Megan and Jo
2. Jacky and Drake
3. Jacky and Jo
4. Megan and Drake

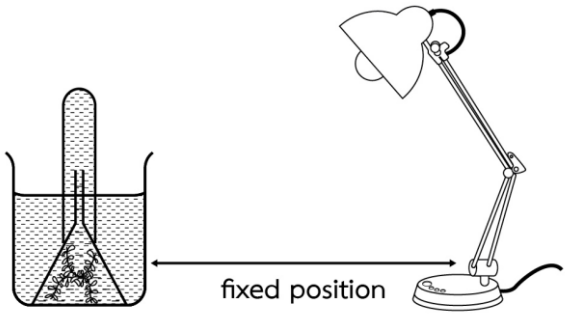
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27. Consider a geological scenario where a vast mountain range, composed primarily of uplifted metamorphic rocks, begins to undergo significant erosion over millions of years. This erosion leads to the transport of immense quantities of sediment to a deep ocean basin. Over time, these sediments accumulate, are buried under subsequent layers, and are subjected to increasing pressure. If, much later, plate tectonic forces cause this ocean basin to be subducted, leading to the melting of some of the deeply buried material and subsequent volcanic activity, analyze how this sequence of events exemplifies the interconnectedness of the rock cycle's major processes. (5 marks)

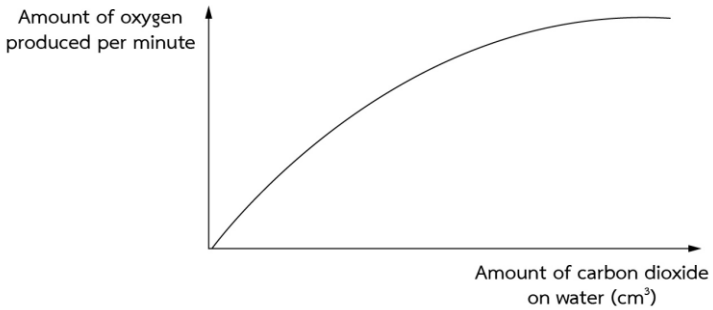
1. Sedimentary rocks form deep within the Earth's crust due to intense heat and pressure.
2. Metamorphic rocks always melt and recrystallize into igneous rocks during their formation.
3. Igneous rocks are exclusively formed from rapidly cooled lava on the Earth's surface.
4. The rocks are continuously transformed from one type to another through various geological processes.

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28. Ashley conducted an experiment on a water plant by changing the amount of carbon dioxide in the water as shown below.



She them recorded her results in a graph below.

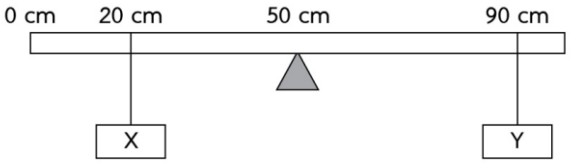


Which of the following explains the result of her experiment above? (5 marks)

1. The rate of photosynthesis is not affected by the amount of carbon dioxide.
2. The rate of photosynthesis is affected by the amount of carbon dioxide.
3. The rate of photosynthesis is affected by the amount of oxygen in the water.
4. The rate of photosynthesis is affected by the amount of light.

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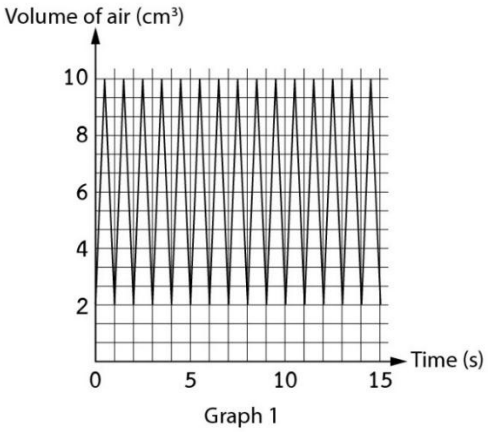
29. A uniform metre rule is balanced at its centre of mass as shown below. When masses X and Y are hung from the positions indicated, the ruler remains in equilibrium.



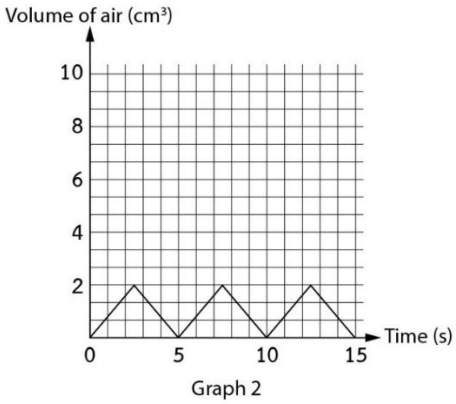
What can be concluded about the masses X and Y? (5 marks)

1. X and Y have the same density.
2. X and Y have the same mass.
3. The ratio of the mass of X to that of Y is 4 : 3.
4. The ratio of the mass of X to that of Y is 3 : 4.

30. The graphs below show the volume of air taken in per breath and the number of breaths over time. Graph 1 was plotted when David carried out Activity 1 while Graph 2 was plotted when David carried out Activity 2.



Graph 1



Graph 2

What do the graphs show? (5 marks)

A. Activity 1 was less vigorous than Activity 2.

B. Different volumes of air were taken in per minute when David carried out the activities.

C. David's breathing rate for Activity 1 was higher than his breathing rate for Activity 2.

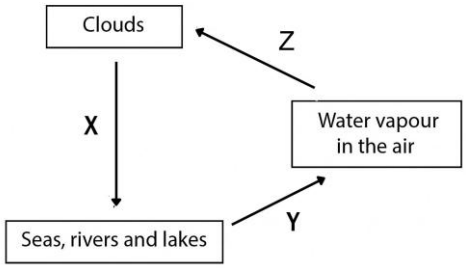
1. A and B only
2. A and C only
3. B and C only
4. A, B and C

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31. A vast, ancient forest ecosystem thrives, home to countless species. Among its intricate webs, scientists observe a particular type of fungus that grows exclusively on the decaying wood of fallen oak trees. This fungus accelerates the decomposition of the wood, releasing nutrients back into the soil. Simultaneously, a unique species of beetle larvae feeds solely on this specific fungus. The larvae, in turn, are a primary food source for a rare, ground-dwelling bird. If a sudden and widespread disease were to eliminate all oak trees in this forest, leading to a significant reduction in fallen oak wood, what long-term ecological consequence would be most immediately and severely felt by the ground-dwelling bird population? (1.25 marks)

1. The ground-dwelling birds would adapt to a carnivorous diet, preying on small mammals.
2. An increase in the overall biodiversity of the forest as new species emerge.
3. An increase in competition among ground-dwelling birds for alternative food sources.
4. A decline in the ground-dwelling bird population due to a disruption in their food chain.

32. The diagram below shows the water cycle.



Which of the following statement about the water cycle is/are correct? (1.25 marks)

A. Heat is lost during process Y.
B. Heat is lost during process Z.
C. Process X causes the clouds to gain heat.
D. The Sun is the main source of energy for the water cycle to repeat continuously.

1. A only
2. B and C only
3. B and D only
4. A, B and D only

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33. Imagine a vast, ancient mountain range, the "Spine of Giants," forged millions of years ago by immense forces deep within the Earth. At its core, molten material, pushed up from the mantle, slowly cooled and solidified beneath the surface, forming massive, crystalline rock bodies. Over eons, relentless forces of wind, water, and ice gradually wore down the towering peaks. Tiny fragments, grains, and dissolved minerals were carried downstream by swift rivers, eventually settling in vast, shallow inland seas. Layer upon layer, these sediments accumulated, becoming buried under immense pressure from overlying deposits. Over time, chemical reactions cemented these loose particles together, forming extensive sheets of banded rock. Later, as continental plates shifted and collided once more, parts of these buried rock layers were subjected to incredible heat and squeezing pressure, but not enough to melt them completely. Instead, their mineral grains recrystallized and realigned, transforming them into entirely new, often foliated, rock types, which were then uplifted to form a new, younger set of hills.

Considering the geological history of the "Spine of Giants" mountain range as described, which of the following statements most accurately traces the journey and transformation of a specific mineral grain that originated from the deepest molten material and eventually became part of the new, younger set of hills? (2.5 marks)

1. The mineral grain first solidified from magma as an igneous rock, then was directly uplifted and transformed into a metamorphic rock by erosion, finally forming the new hills.

2. The mineral grain initially formed within a sedimentary rock deep underground, which was then uplifted, weathered, and finally melted to contribute to the formation of the new hills.

3. The mineral grain originated from the slow cooling of magma, was then weathered and eroded into sediment, compacted and cemented into a sedimentary rock, and finally recrystallized under heat and pressure into a metamorphic rock now forming the younger hills.

4. The mineral grain was created during the rapid cooling of lava on the surface, quickly eroded into a metamorphic rock, which then accumulated in layers to form the sedimentary rocks of the new hills.

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34. The Green Thumbs Club at Evergreen Middle School decided to conduct an experiment to understand what plants need to grow. They prepared four identical pots, each containing the same type and amount of soil and a healthy young seedling of the same species. They placed the pots in different locations and monitored their growth (measured by height and number of new leaves) over three weeks.

Pot A: Placed outdoors in direct sunlight for 8 hours a day. Watered generously every morning (soil remained moist but not waterlogged). Average daily temperature 25°C.

Pot B: Placed outdoors next to Pot A, receiving the same direct sunlight and watering. However, it was covered with a special, very thin mesh that blocked about 50% of the sunlight from reaching the plant. Average daily temperature 25°C.

Pot C: Placed indoors in a dimly lit corner of the classroom, far from any windows. Watered generously every morning. Average daily temperature 25°C.

Pot D: Placed outdoors next to Pot A and Pot B, receiving the same direct sunlight. But it was only watered once every three days (soil often felt dry to the touch). Average daily temperature 25°C.

After three weeks, the students recorded their observations:

Pot A: Grew the tallest, with many large, dark green leaves.

Pot B: Grew taller than Pot C and D, but not as tall as Pot A. Its leaves were a slightly lighter green.

Pot C: Showed very little growth, with small, pale yellowing leaves.

Pot D: Grew a little, but its leaves were droopy and some turned brown at the edges. It was significantly shorter than Pot A and B.

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Based on the Green Thumbs Club experiment, which factor was the most limiting for the growth of the plant in Pot C compared to Pot A, and why? (2.5 marks)

1. Water availability: Because Pot C was watered generously, ruling out water as a limiting factor.

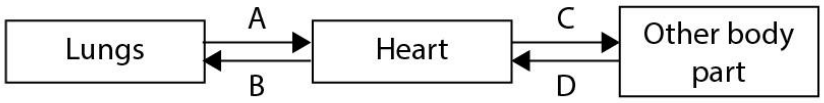
2. Light intensity: Because Pot C received very little light, which is essential for photosynthesis to produce food for growth.

3. Soil quality: Because all pots had the same soil, indicating soil quality was not a variable causing the difference.

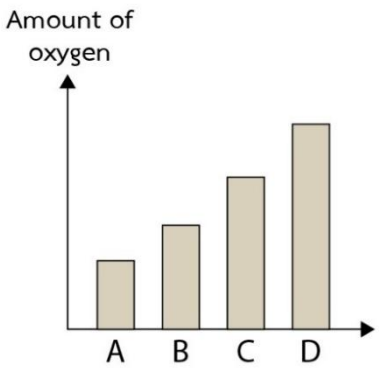
4. Temperature: Because all pots were kept at the same average daily temperature, meaning temperature did not explain the poor growth.

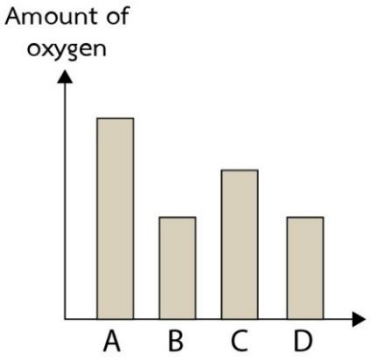
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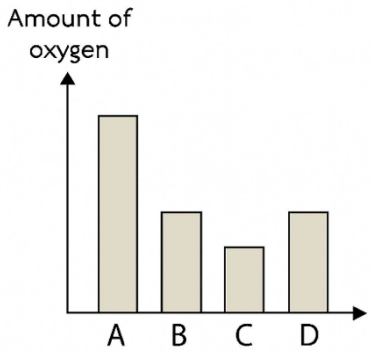
35. The diagram below shows how blood is circulated in a human body. Arrows A, B, C and D represent the flow of blood to various parts of the body.

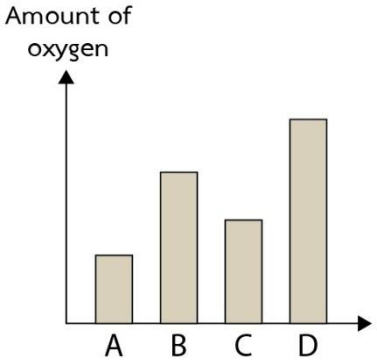


Which one of the following graphs correctly represents the amount of oxygen in A, B, C and D? (2.5 marks)

1.


2.


3.


4.


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36. A pristine river ecosystem is known for its delicate balance, with several species of native fish forming a key part of the food web, serving as both predators of smaller organisms and prey for larger birds and mammals along the riverbanks. One day, a non-native species of highly aggressive, predatory fish is accidentally introduced into the river. This new fish reproduces rapidly and has no natural predators in this new environment. What is the most likely cascade of ecological impacts on this river ecosystem, specifically affecting the native fish and other wildlife? (2.5 marks)

1. The native fish will evolve to avoid the non-native fish, maintaining the balance of the ecosystem.
2. The non-native fish will introduce new diseases that only affect the aquatic plants, making the water clearer.
3. The non-native fish will outcompete and prey on the native fish, leading to a drastic decline in the native fish population.
4. The non-native fish will provide a new food source for the native birds, increasing their population.

37. The Garcia family loves to look at their family photos and see who has eyes like whom. They noticed something interesting about eye color. (5 marks)

Grandparents: Grandpa Miguel has “brown eyes”. Grandma Elena has “brown eyes”.

Parents: Their son, Mr. Garcia (Dad), has “brown eyes”. Mrs. Garcia (Mom) also has “brown eyes”.

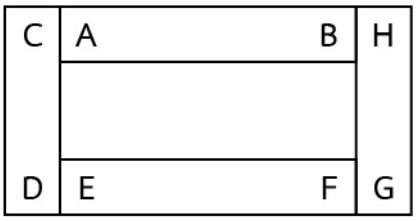
Children: Their first child, a daughter named Isabella, has “brown eyes”. Their second child, a son named Leo, has beautiful “blue eyes”.

Based on the Garcia family's eye colors, what can we understand about how the “blue eye color” appeared in Leo, even though his parents and grandparents all have brown eyes?

1. Leo's blue eyes came from a brand new trait that just started with him.
2. Leo's blue eyes came from Grandma Elena because she also had brown eyes.
3. Blue eye color must have been hidden in Leo's parents, even though they have brown eyes.
4. Only brown eye color can be passed down in the Garcia family.

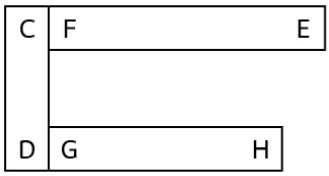
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38. The diagram below shows the arrangement of four bar magnets that form a rectangular frame.

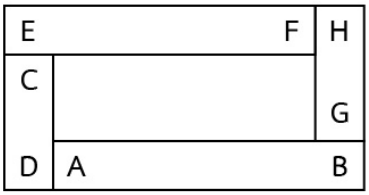


Which of the following arrangements is/are not possible? (5 marks)

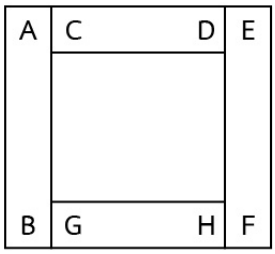
A.



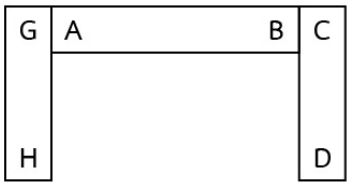
B.



C.



D.



1. A only
2. B and C only
3. B and D only
4. B, C and D only

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39. Imagine the coastal town of Seabreeze, nestled at the foot of Mount Verdant. During a particularly warm and humid summer day, the sun shines brightly, causing significant evaporation from the calm ocean waters and the moist forest floor of the mountain. As evening approaches, a cool, gentle breeze begins to flow down from the higher elevations of Mount Verdant towards the coastline. The sky remains clear, with no clouds visible. By early morning, residents wake up to find a thick blanket of fog enveloping the coastal area, making visibility very poor. Simultaneously, on the leaves of plants higher up on the mountain slopes, tiny water droplets shimmer in the morning light, even though there was no rain during the night.

Which of the following statements best explains the formation of both the thick fog in Seabreeze and the tiny water droplets on the mountain slopes during this specific night, based on the principles of the water cycle and atmospheric conditions? (5 marks)

1. The warm daytime temperatures caused widespread evaporation, and as the air cooled rapidly at night, all the water vapor condensed into clouds that then settled as fog and dew.

2. The fog in Seabreeze formed due to high levels of pollution trapping moisture near the ground, while the mountain droplets were a result of groundwater seeping onto the leaves.

3. The humid air from the ocean and forest cooled to its dew point as it mixed with cooler air descending from the mountain, leading to condensation near the coast (fog) and directly onto surfaces (dew) where temperatures dropped below the saturation point.

4. The large volume of evaporated water created heavy air that sank, forming fog, and the droplets on the mountain were residual raindrops from an unobserved overnight drizzle that evaporated on lower elevations.

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40. A nutritionist is evaluating the diet of a teenager who frequently consumes highly processed snacks, sugary drinks, and fast food, rarely eating whole grains, fruits, or vegetables. Which of the following long-term health consequences is most directly linked to this dietary pattern due to specific nutrient imbalances or deficiencies, and why? (5 marks)

1. Scurvy, because processed foods completely lack Vitamin C, leading to gum bleeding.
2. Rickets, due to insufficient calcium absorption in the bones caused by excess sugar.
3. Type 2 diabetes and increased risk of heart disease, because of high intake of refined carbohydrates, unhealthy fats, and lack of fiber.
4. Anemia, as processed foods contain antinutrients that block iron absorption from the small amount of iron consumed.

---------- End of Questions ----------

Please check your answers before submitting the answer sheet.

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คำตอบวิชาวิทยาศาสตร์ ชั้นประถมศึกษาปีที่ 6

ข้อ	คำตอบ	ข้อ	คำตอบ
1	2	21	3
2	3	22	2
3	2	23	2
4	1	24	4
5	3	25	3
6	2	26	3
7	2	27	4
8	2	28	2
9	3	29	3
10	3	30	3
11	1	31	4
12	1	32	3
13	4	33	3
14	2	34	2
15	4	35	2
16	2	36	3
17	1	37	3
18	2	38	4
19	1	39	3
20	2	40	3

* หมายเหตุ : ข้อ 32 รูปในโจทย์ลูกศรไม่ถูกต้องกรรมการจึงพิจารณาให้คะแนนข้อนี้ทุกคน และแก้ไขเรียบร้อยในชุดข้อสอบนี้

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