Science Autumn Diagnostic Assessment 2023-24

Year 7 - Section A

Time allowed: 30 minutes

Total 30 marks

Materials

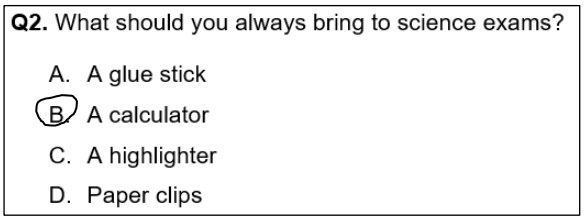
- a black or blue pen

Information

- There are a total of 30 multiple-choice questions
  - There are 10 biology, 10 chemistry and 10 physics questions
- Each question has 4 options: A, B, C or D
- You can make notes and show workings on the paper

Instructions

- Circle the letter of the **one** correct option for each of the multiple-choice questions as shown in this example



- If you make a mistake, draw a cross through the mistake and draw a circle around your answer. If this looks unclear, write the letter next to question

Surname: _____

Forename(s): _____

Class and teacher: _____

BIOLOGY

Q1. What is the best description of a **cell**?

A. Everything on Earth is made from cells
B. All living things are made from cells
C. Cells are tiny organisms that can cause disease e.g. bacteria
D. All cells can be seen in a light microscope

Q2. Which part of the cell is a jelly-like substance where all the reactions happen?

A. Chloroplasm
B. Chloroplast
C. Cytoplasm
D. Cytoplast

Q3. Name three things that are seen in both plant cells and animal cells.

A. Cell wall, vacuole, chloroplast
B. Nucleus, cell wall, cell membrane
C. Nucleus, cytoplasm, cell membrane
D. Vacuole, cell membrane, nucleus

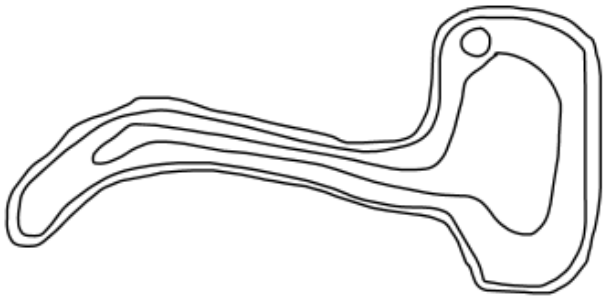
Q4. The diagram below shows a sperm cell.



Choose which part is labelled X.

A. Cytoplasm
B. Nucleus
C. Vacuole
D. Mitochondrion

Q5. The diagram below shows a root hair cell.



Choose how we know this is a plant cell.

A. It has a large surface area
B. It has a large vacuole
C. It has no cell membrane
D. It has no cell wall

Q6. You accidentally touch something very hot and your hand moves away quickly.

Which of the 7 life processes of organisms is being used?

A. Sensitivity
B. Respiration
C. Excretion
D. Energy

Q7. Choose the best description of the function of a microscope.

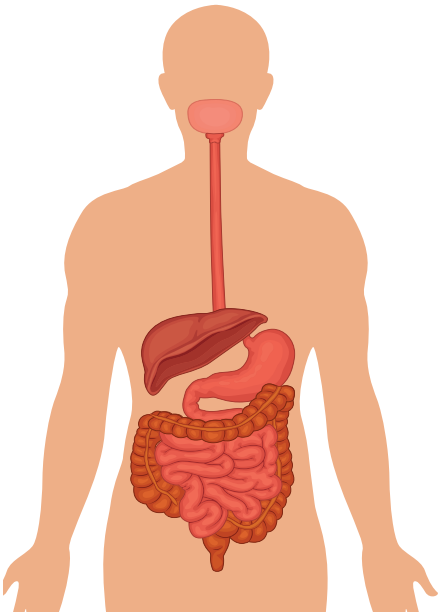
A. To make something small appear much larger
B. To make something large appear much smaller
C. To make something far away appear closer
D. Microscopes use glass slides and coverslips

Q8. What is the total magnification is when the eyepiece lens is 2 X and the objective lens is 10 X?

A. 12 X
B. 5 X
C. 8 X
D. 20 X

Q9. How do we know that this diagram is showing an organ system?

A. It is made of more than one tissue working together
B. It is the digestive system
C. It shows the stomach which is made of tissues
D. It is made of more than one organ working together



Q10. Below shows an incomplete risk assessment written by a student who was planning an investigation to look at leaf cells under the microscope.

Hazard – *the glass slide might break and cut someone*

Precaution –

What should the precaution be?

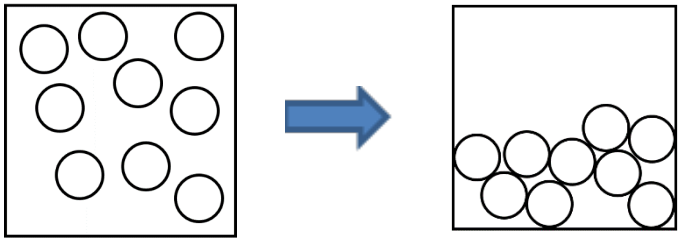
A. Broken glass can be dangerous to students
B. Use the microscope properly
C. Place a plaster on the cut to stop the bleeding
D. Do not let the objective lens touch the slide

CHEMISTRY

Q1. Which of the following would make the diffusion of two liquids happen faster?

A. Increase the temperature of one liquid
B. Decrease the temperature of one liquid
C. Increase the size of the container the liquids are placed in
D. Add more of both liquids

Q2. Below shows diagrams of particle arrangements.



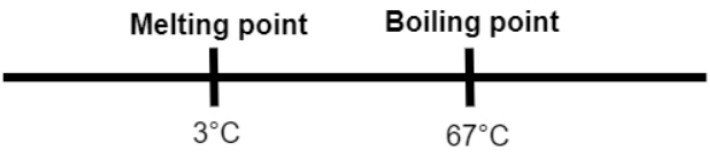
Which change in state is represented by the arrow?

A. Liquid to gas
B. Condensation
C. Evaporation
D. Freezing

Q3. A substance has a melting point of 3 °C and a boiling point of 67 °C.

What state will the substance be in at room temperature (18 °C)?

Use the diagram below to help you.



A. Solid
B. Liquid
C. Gas
D. Not enough information to know for certain

Q4. The results table below shows how fast three different colour of paint diffused in 1 litre of water.

Paint colour	Time taken to diffuse in 1 litre of water (min)
Red	2
Purple	3
Black	6

What is the independent variable in this investigation?

A. The different colours of paint
B. The black paint took longest to diffuse
C. The time taken to diffuse in 1 litre of water (min)
D. Measuring how fast the colours took to diffuse

Q5. Solids do not take the shape of their container.

Diffusion doesn't happen between two solids.

Choose the best scientific explanation for **both** these observations.

A. Particles in a solid are arranged in a regular pattern
B. The forces between particles in a solid hold them together so they are not free to move
C. Solid particles are joined together and held in a particular shape
D. Diffusion only happens in liquids and solids

Q6. A student investigated a substance and makes the following notes:

- *It is a brown colour*
- *It changes shape if I put it in different shaped, sealed bottles*
- *It flows if I move the bottle around with the lid on*

Choose which state of matter the substance must be.

A. Solid
B. Liquid
C. Gas
D. Liquid or gas

Q7. Below shows the melting points of two different substances.

Melting point of water = 0 °C

Melting point of chocolate = 30 °C

Why do water and chocolate have different melting points?

A. Chocolate particles need to be heated more than water particles
B. The temperature that a substance turns from a solid to a liquid
C. Particles in chocolate are joined together more strongly than the particles in water
D. Particles in chocolate need more heat to expand than particles in water

Q8. A gas can be compressed but a solid cannot.

Choose the best explanation for this difference.

A. Particles in a gas move but they do not in a solid.
B. There are air spaces between particles in a gas but not in a solid.
C. There is empty space between particles in a gas but not in a solid.
D. Because gases are invisible but we can see solids.

Q9. The small gaps between particles in a liquid …

A. contain air.
B. is empty space.
C. are to be filled by other particles.
D. contain smaller particles of liquid.

Q10. A student wanted to find out if water or orange juice froze the fastest.

They filled on ice cube tray with water and one ice cube tray with orange juice. Then they timed how long it took to freeze and turn solid.

Choose a control variable for this investigation.

A. An ice cube tray
B. The same amount of time to freeze
C. Measuring time taken for water or orange juice to freeze
D. The same type of ice cube tray

PHYSICS

Q1. Which piece of equipment is used to measure force?

A. Ruler
B. Newtons
C. Newton meter
D. Weights

Q2. Which of the following is a non-contact force?

A. Friction
B. Magnetism
C. Air resistance
D. Tension

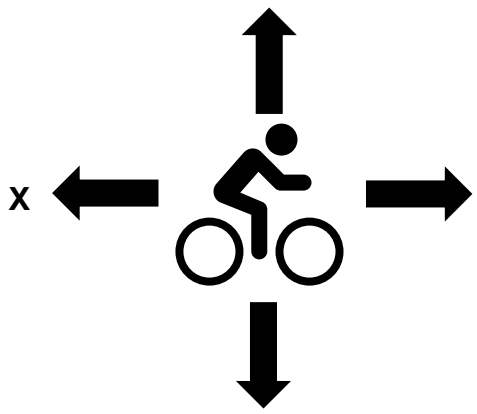
Q3. Which of the following is **NOT** a force?

A. Upthrust
B. Speed
C. Gravity
D. Drag

Q4. Below shows a diagram of the forces acting on a cyclist moving at constant speed.

What force is shown by arrow X?

A. Gravity
B. Air resistance
C. Thrust
D. Unbalanced force



Q5. A man moves a trolley forward.

Which statement best describes the forces moving it forward?

A. The man exerts the force in his muscles to move the trolley forward
B. The man grips the handle of the trolley with force
C. The man exerts a pulling force on the trolley
D. The man exerts a pushing force on the trolley

Q6. Force A and force B act on a moving ball as shown in this diagram.



Force A is less than force B.

Which of these could happen to the ball?

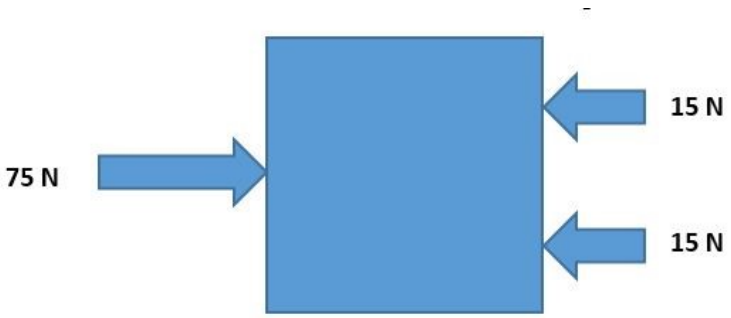
A. Change in speed
B. Gravity will slow it down eventually
C. Move at the same speed
D. Stop moving

Q7. Which of the following would cause the most friction?

A. A smooth object dragged along a smooth surface
B. A smooth object dragged along a rough surface
C. A rough object dragged along a smooth surface
D. A rough object dragged along a rough surface

Q8. What is the size of the resultant force on the box shown in the diagram below?

A. 105 N
B. 45 N
C. 75 N
D. 30 N



Q9. A cup is stationary on a table.

Which of these statements is true?

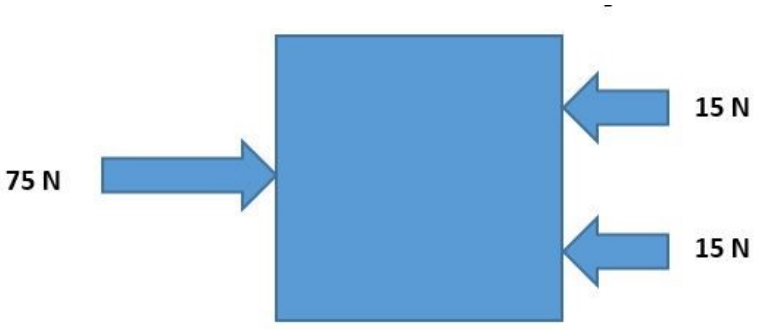
A. The cup exerts a force on the table and the table exerts an equal force back on the cup
B. There are no force acting on the cup because it is not moving
C. The cup exerts a force on the table, but the table exerts a bigger force on the cup
D. The only force acting on the cup is gravity because it holds it down on the table

Q10. The blue box was stationary.

Then forces were applied to the box as shown in the diagram below.

Choose the direction the box will move.

A. Right
B. Left
C. It won't move
D. Not enough information to know for certain



End of Science Assessment