



Candidate Name

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Candidate Number

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Centre Name

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Centre Number

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Paper 1: Multiple Choice

Sample Paper

1 hour

It is necessary to respond on the answer sheets provided alongside this question paper. Additionally, you can use a soft pencil (preferably of type B or HB), a clean eraser and a dark blue or black pen.

INSTRUCTIONS:

- You must write your name, candidate number, centre name and centre number on the answer sheets in the designated spaces.
- The paper consists of xx questions, and it is essential that you attempt all of them.
- Attempt all the questions using a dark blue or black pen.
- It is important to follow the instructions provided on the answer sheets.
- Do not use correction fluid.
- Avoid writing on any bar codes.
- You are allowed to use a calculator if needed.
- A periodic table is found at the back of the paper.

INFORMATION:

- This paper has a total of 50 marks.
- The number of marks assigned for every question or its parts is indicated within brackets [].
- Rough work must be completed on this question paper.

Biology Section (15 Questions)

Question 1

Which structure in a plant cell is responsible for photosynthesis?

- a) Nucleus
- b) Chloroplast
- c) Mitochondrion
- d) Vacuole

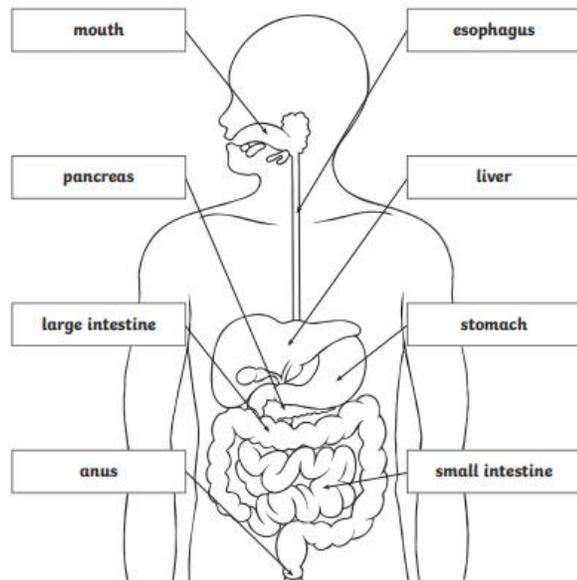
Question 2

What is the primary function of the xylem in plants?

- a) Transport glucose
- b) Transport water
- c) Transport amino acids
- d) Transport oxygen

Question 3

The diagram below shows a human digestive system. Which organ produces bile?



- a) Stomach
- b) Pancreas
- c) Liver
- d) Small intestine

Question 4

Which of the following is a characteristic of osmosis?

- a) Movement of water molecules through a partially permeable membrane
- b) Movement of solutes from a low concentration to a high concentration
- c) Active transport of molecules across a membrane
- d) Movement of water molecules through a fully permeable membrane

Question 5

Which of the following best describes the role of enzymes in digestion?

- a) Breaking down large molecules into smaller molecules
- b) Transporting nutrients to cells
- c) Increasing the temperature of reactions
- d) Storing energy in cells

Question 6

Which of the following correctly describes the term *allele*?

- a) A structure containing all the genes of an organism.
- b) A different form of a gene.
- c) A pair of chromosomes carrying the same genes.
- d) A molecule that stores genetic information.

Question 7

What is the correct sequence of energy flow in a food chain?

- a) Herbivore → Producer → Carnivore → Decomposer
- b) Producer → Herbivore → Carnivore → Decomposer
- c) Producer → Carnivore → Herbivore → Decomposer
- d) Carnivore → Producer → Herbivore → Decomposer

Question 8

What is the role of red blood cells in the human body?

- a) Fighting infection
- b) Clotting blood
- c) Transporting oxygen
- d) Breaking down food

Question 9

What is the main waste product removed by the lungs?

- a) Urea
- b) Carbon dioxide
- c) Ammonia
- d) Water vapor

Question 10

Which type of variation is shown by human blood groups?

- a) Continuous variation
- b) Discontinuous variation
- c) Environmental variation
- d) Random variation

Question 11

What is the function of stomata in plants?

- a) Absorb water
- b) Allow gas exchange
- c) Transport nutrients
- d) Protect the leaf

Question 12

In which part of the cell does aerobic respiration occur?

- a) Cytoplasm
- b) Nucleus
- c) Mitochondria
- d) Ribosomes

Question 13

Which of the following organisms is a decomposer?

- a) Fox
- b) Grasshopper
- c) Fungi
- d) Rabbit

Question 14

Which process involves the loss of water from the leaves of a plant?

- a) Osmosis
- b) Transpiration
- c) Photosynthesis
- d) Respiration

Question 15

What is the role of insulin in the body?

- a) To increase blood sugar levels
- b) To decrease blood sugar levels
- c) To break down proteins
- d) To transport oxygen

Chemistry Section (15 Questions)

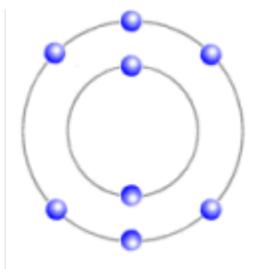
Question 16

What is the relative charge of a proton?

- a) +1
- b) 0
- c) -1
- d) -2

Question 17

The diagram below shows the electronic structure of an atom. What is the atomic number of this element?



- a) 2
- b) 6
- c) 8
- d) 12

Question 18

Which of the following describes a chemical change?

- a) Melting of ice
- b) Dissolving sugar in water
- c) Burning of paper
- d) Breaking a glass

Question 19

Which process is used to separate a mixture of liquids with different boiling points?

- a) Filtration
- b) Distillation
- c) Crystallization
- d) Chromatography

Question 20

Which substance has a giant covalent structure?

- a) Sodium chloride
- b) Diamond
- c) Water
- d) Oxygen

Question 21

What happens to the particles in a solid when it melts?

- a) They move closer together
- b) They vibrate more vigorously
- c) They become stationary
- d) They lose energy

Question 22

Which gas is produced when hydrochloric acid reacts with calcium carbonate?

- a) Oxygen
- b) Hydrogen
- c) Carbon dioxide
- d) Chlorine

Question 23

What is the chemical formula for ammonium sulfate?

- a) NH_4SO_4
- b) $(\text{NH}_4)_2\text{SO}_4$
- c) $\text{NH}_{42}\text{SO}_4$
- d) NH_4SO_3

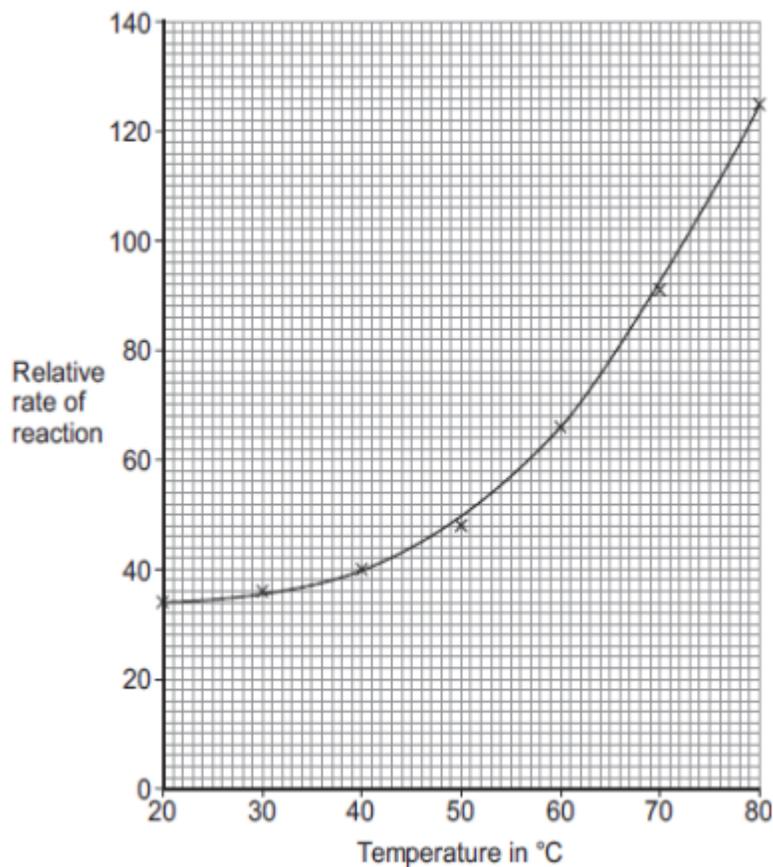
Question 24

Which of the following is a property of metals?

- a) Poor electrical conductivity
- b) Brittle
- c) Low melting point
- d) Malleable

Question 25

The graph below shows the rate of reaction at different temperatures. What conclusion can be drawn from the graph?



- a) Higher temperatures decrease reaction rate
- b) Reaction rate is unaffected by temperature
- c) Reaction rate increases with temperature
- d) Higher temperatures slow particle movement

Question 26

Which of the following solutions has the highest pH?

- a) Lemon juice
- b) Vinegar
- c) Sodium hydroxide
- d) Water

Question 27

Which is the main component of natural gas?

- a) Methane
- b) Ethane
- c) Propane
- d) Butane

Question 28

How many electrons are shared in a double covalent bond?

- a) 2
- b) 4
- c) 6
- d) 8

Question 29

What is the purpose of a catalyst in a chemical reaction?

- a) To slow down the reaction
- b) To speed up the reaction without being consumed
- c) To increase the reactants' energy
- d) To decrease the amount of product

Question 30

Which compound is a hydrocarbon?

- a) H_2O
- b) CO_2
- c) C_2H_6
- d) NaCl

Physics Section (15 Questions)

Question 31

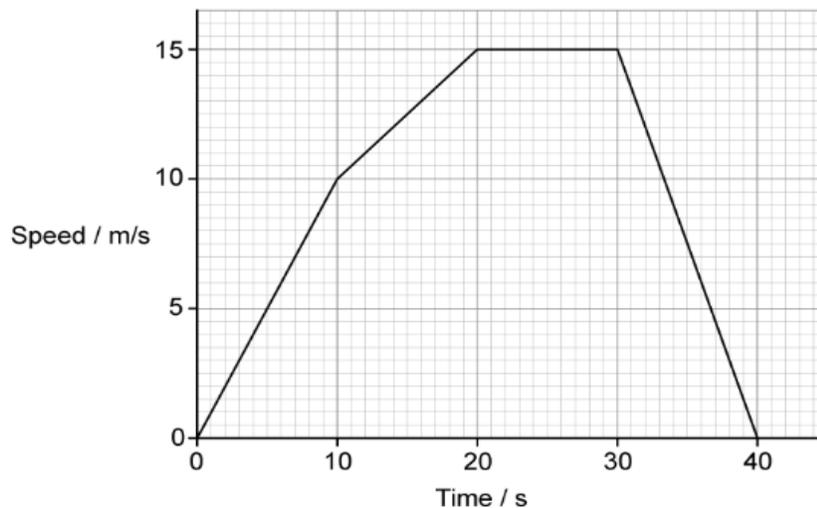
A car accelerates uniformly from rest to a velocity of 20 m/s in 5 seconds. What is the car's acceleration?



- a) 2 m/s^2
- b) 4 m/s^2
- c) 5 m/s^2
- d) 10 m/s^2

Question 32

The graph below shows the motion of an object.



At a time in the journey, the object travels at a constant speed. Calculate the distance travelled by the object during this time.

- a) 100m
- b) 150m
- c) 300m
- d) 500m

Question 33

Which of the following represents a scalar quantity?

- a) Force
- b) Velocity
- c) Distance
- d) Acceleration

Question 34

Which of the following is the unit of power?

- a) Newton
- b) Joule
- c) Watt
- d) Pascal

Question 35

A pendulum completes 10 oscillations in 5 seconds. What is the frequency of the pendulum?

- a) 0.5 Hz
- b) 2 Hz
- c) 5 Hz
- d) 10 Hz

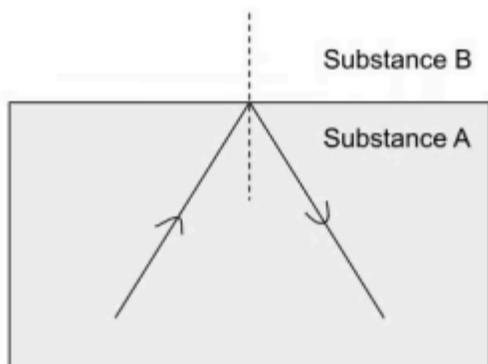
Question 36

A student observes that sound travels faster in water than in air. What is the reason for this?

- a) Water has a higher temperature than air
- b) Water particles are closer together than air particles
- c) Water is less dense than air
- d) Water vibrates more than air

Question 37

The diagram below shows a ray of light undergoing total internal reflection at the boundary between substance A and substance B.



What row below is correct?

	Angle of Incidence	Substance A
A	Greater than critical angle	Greater refractive index than substance B
B	Greater than critical angle	Greater refractive index than substance B
C	Less than critical angle	Smaller refractive index than substance B
D	Less than critical angle	Smaller refractive index than substance B

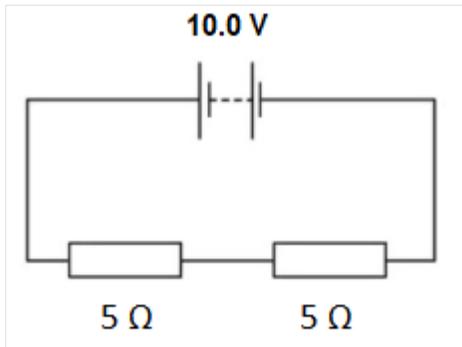
Question 38

Which of the following electromagnetic waves has the longest wavelength?

- a) Gamma rays
- b) X-rays
- c) Infrared
- d) Radio waves

Question 39

The diagram below shows a circuit comprised of two resistors connected in series with a 10.0 V battery. What current is going through the battery?



- a) 1.5 A
- b) 15 A
- c) 20 A
- d) 1 A

Question 40

A force of 10 N is applied to a spring, stretching it by 0.2 m. What is the spring constant?

- a) 2 N/m
- b) 20 N/m
- c) 50 N/m
- d) 200 N/m

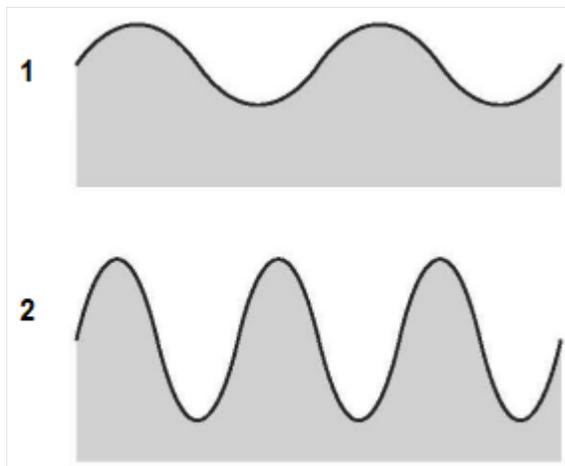
Question 41

Which of the following is a correct description of nuclear fission?

- a) The joining of two light nuclei to form a heavier nucleus.
- b) The splitting of a heavy nucleus into two smaller nuclei, releasing energy.
- c) The emission of radiation from an unstable nucleus.
- d) The conversion of a neutron into a proton and an electron within a nucleus.

Question 42

The diagram below shows two different waves travelling from left to right. Both waves are travelling at the same speed on top of a lake. Assume the same scale for both waves.



Using the above information, which wave has the greatest amplitude and which wave has the greatest frequency.

	Greatest Amplitude	Greatest Frequency
a)	1	1
b)	1	2
c)	2	1
d)	2	2

Question 43

A box of mass 5 kg is lifted 2 m vertically. How much work is done against gravity?

Assume $g = 10 \text{ m/s}^2$

- a) 10 J
- b) 20 J
- c) 50 J
- d) 100 J

Question 44

Which of the following statements best describes renewable energy?

- a) Energy obtained from fossil fuels
- b) Energy that can be replenished naturally
- c) Energy that is always available in large amounts
- d) Energy that requires no equipment to harness

Question 45

A student makes a series of statements about magnetism, which one of them is correct?

- a) A permanent bar magnet is able to repel material that is magnetic.
- b) The field lines that are present in a permanent bar magnet cross each other where the field is the strongest.
- c) A soft magnetic material must be used to create a permanent bar magnet.
- d) The North pole of a permanent bar magnet can repel another North pole of a different magnet.

Experimental Skills Section (5 questions)

Question 46

A student investigates the effect of temperature on enzyme activity using amylase and starch. What is the purpose of adding iodine to the solution during the experiment.

- a) To stop the reaction
- b) To check for the presence of starch
- c) To measure the rate of enzyme activity
- d) To sterilise the solution

Question 47

A student places a leaf in boiling water before testing it for starch. What is the purpose of boiling the leaf?

- a) To soften the leaf for easier testing
- b) To kill the cells and stop chemical reactions
- c) To remove chlorophyll from the leaf
- d) To make the leaf absorb iodine solution better

Question 48

In a titration experiment, a student uses phenolphthalein as an indicator. What colour change will occur when the endpoint is reached if an acid is titrated into an alkali?

- a) Red to colourless
- b) Pink to colourless
- c) Colourless to pink
- d) Yellow to orange

Question 49

A student investigates the rate of reaction between calcium carbonate and hydrochloric acid. Which apparatus is the most suitable for measuring the volume of gas produced?

- a) A measuring cylinder
- b) A gas syringe
- c) A stopwatch
- d) A burette

Question 50

A student measures the time taken for a pendulum to complete 10 swings. How can the student increase the accuracy of their results?

- a) Increase the length of the pendulum string
- b) Use a stopwatch with a higher resolution
- c) Measure the time for one swing only
- d) Reduce the mass of the pendulum bob

End of Paper A