

Science Entry Assessment

Name _____ Date _____ Score _____

Time: about 55 minutes. Hampstead Tuition Centre - Year 7 Science Entry Assessment. Answer every question. Show all your working, especially in calculations. Always give the correct units. You may not use a calculator unless a question says so. Write clearly. This paper is harder than a normal school test - do your best and attempt every part. Method marks are awarded, so always show your reasoning. Show your working where you can. Marks for each question are shown in brackets, like [2]. Total marks: **58**.

- 1 Sort these into the correct column: oxygen, iron, water, salt (sodium chloride), gold, carbon dioxide, brass, air. Write each one under 'Element', 'Compound' or 'Mixture'. [4]

WORKING

Answer _____

CHEMISTRY: ELEMENTS AND COMPOUNDS

- 2 A pupil heats some ice in a beaker until it turns to water, then keeps heating until it boils into steam. Name the change of state (a) from ice to water, and (b) from water to steam. (c) Explain, in terms of particles, why steam takes up far more space than the same mass of ice. [4]

WORKING

Answer _____

CHEMISTRY: STATES OF MATTER AND PARTICLES

- 3 A simple food chain in a meadow is: grass → grasshopper → frog → hawk. (a) Name the producer. (b) Name a herbivore (primary consumer). (c) Use the idea of energy to explain why there are far more grasshoppers than hawks in the meadow. [4]

WORKING

Answer _____

BIOLOGY: FOOD CHAINS AND ENERGY

- 4 A trolley travels 60 metres in 12 seconds at a steady speed. (a) Write the equation linking speed, distance and time. [4]
(b) Calculate its speed, giving the unit. (c) If it kept this speed, how far would it travel in 30 seconds?

WORKING

Answer

PHYSICS: SPEED CALCULATION

- 5 State the function of each part of a plant cell: (a) the part that controls the cell and contains genetic information, (b) the green part where photosynthesis happens, (c) the strong outer layer that gives the cell its shape and support. [4]
(d) Name one part found in this plant cell but NOT in an animal cell, other than the ones above, and state its job.

WORKING

Answer

BIOLOGY: PLANT CELLS

- 6 A pupil makes a simple circuit with one cell and two identical bulbs in series. (a) What happens to the brightness of each bulb compared with a circuit with just one bulb? (b) She then rebuilds the circuit with the two bulbs in parallel instead. State one difference she would notice in the brightness. (c) Explain why a parallel arrangement is used for the lights in a house. [4]

WORKING

Answer

PHYSICS: SERIES AND PARALLEL CIRCUITS

- 7 Universal indicator is added to four solutions. The colours seen are: lemon juice = red, pure water = green, soapy water = blue, oven cleaner = purple. (a) Which solution is neutral? (b) Which is the strongest alkali? (c) Lemon juice has a pH of about 2. Suggest a possible pH for soapy water, and explain your choice. [4]

WORKING

Answer

CHEMISTRY: ACIDS, ALKALIS AND PH

- 8 Explain why a metal spoon left in a cup of hot tea soon feels hot at the handle, but a plastic spoon does not. Use the words 'conductor', 'insulator' and 'energy' in your answer. [3]

WORKING

Answer

PHYSICS: THERMAL CONDUCTION

- 9 A pupil investigates how the height a ball is dropped from affects how high it bounces. (a) Name the independent variable (the one she changes). (b) Name the dependent variable (the one she measures). (c) Give TWO things she must keep the same to make it a fair test. [4]

WORKING

Answer

WORKING SCIENTIFICALLY: VARIABLES AND FAIR TESTING

- 10 Name the seven life processes that all living things carry out (the ones often remembered as MRS GREN). You may give any six of the seven for part marks. Then give one example of how a named plant carries out 'sensitivity'. [3]

WORKING

Answer

BIOLOGY: CHARACTERISTICS OF LIVING THINGS

- 11 A magnet is brought near various objects. (a) Name TWO metals that a magnet will attract. (b) A pupil claims 'all metals are magnetic'. State whether this is true and give an example to support your answer. (c) Describe what happens when the north pole of one magnet is brought near the north pole of another. [5]

WORKING

Answer _____

PHYSICS: MAGNETISM

- 12 Describe how you would safely use a Bunsen burner to heat a liquid in a test tube. Give (a) one safety rule about the flame when not heating, (b) one safety rule about pointing the test tube, and (c) why you should heat the liquid gently and move the tube. [3]

WORKING

Answer _____

WORKING SCIENTIFICALLY: LABORATORY SAFETY

- 13 STRETCH. A pupil dissolves 20 g of sugar in 100 g of water and the sugar disappears. (a) State the total mass of the solution and name the law you used. (b) She leaves the solution in a warm place and after some days a white solid is left in the dish. Explain what has happened to the water and why the sugar is left behind. [4]

WORKING

Answer _____

CHEMISTRY: DISSOLVING, EVAPORATION AND CONSERVATION OF MASS

- 14 STRETCH. The table shows the time for ice cubes to fully melt in three drinks left in the same warm room. Drink A started at 18 C and melted in 4 minutes; Drink B started at 10 C and melted in 7 minutes; Drink C started at 4 C and melted in 11 minutes. (a) Describe the pattern between starting drink temperature and melting time. (b) Explain, using energy transfer, why a warmer drink melts the ice faster. [4]

WORKING

Answer

PHYSICS/CHEMISTRY: ENERGY TRANSFER AND MELTING (DATA INTERPRETATION)

- 15 STRETCH. The Sun, the Moon and the Earth are involved in day, night and the year. (a) Explain why we have day and night, naming the movement of the Earth involved. (b) Explain why it is warmer in summer than in winter in the UK, mentioning how the Earth is tilted. (c) Why does the Moon appear to shine even though it does not make its own light? [4]

WORKING

Answer

PHYSICS: EARTH IN SPACE (STRETCH)

End of assessment. Hand your paper back when you are finished. Well done!