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Total

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	0	4 H elica	Neon 10 40 Argon	18 84 84 Krypton 36 Xenon	Radon 86	
	^		19 Fluorine 9 35.5 Cl	80 Br Bromine 35 127 1 127 1 10dine	Astatine 85	
	ဖ		Oxygen 8 8 32 Sulphur	Se Selenium 34 Te Tellurium Tellurium		
	2		Nitrogen 7 31 Phosphorus	15 75 AS Arsenic 33 33 Sb Antimony	209 Bismuth 83	
	4		Carbon Carbon 6 6 6 6 Silicon Silicon	73 Germanium 32 119 Sn	207 Pb Lead 82	
	က		Boron 5 27 Aluminium	13 70 Ga Gallium 31 115 In Indium	204 TT Thallium 81	
ш				65 Znc Zinc 30 112 Cd Cadmium	201 Hg Mercury 80	
TABL				63.5 Cu Copper 29 108 Ag Silver	47 197 Au Gold 79	
THE PERIODIC TABLE				Nickel Nickel 28 106 Pd Palladium	195 Pt Platinum 78	
HE PEI				S9 Cobalt 27 103 Rh Rhodium		
F				56 Fe Iron 26 101 RU Ruthenium	190 Os Osmium 76	ornic
	Group	Hydrogen		52 55 Cr Mn Chromium Manganese 24 25 96 99 Mo TC Molybdenum Technetium	186 Rhenium 75	Key Relative atomic mass Symbol Name Atomic number
		,		S2 Cr Chromium M 24 96 Molybdenum T	184 W Tungsten 74	
				Vanadium 23 23 93 Nb		
				48 Titanium 22 91 SI Zirconium		
				Scandium 21 Yttrium	139 Lanthanum 57 227 Actinium 89	
	α		9 Be Beryllium 4 24 Mg	Calcium 20 88 Strontium	Barium Barium 56 226 Radium 88	
	-		Lithium 3 3 4 23 Na Sodium	_	37 133 Cs Caesium 55 223 Fr Francium	
		Period 1	N m	4 დ	9 /	

Look at the Periodic Table on page 2. (a) Give the symbol of the element that has the atomic number of 12. (1) (b) Give the symbol of the element that has a relative atomic mass of 12. (1) (c) Give the number of the group that contains the noble gases. (1) (1) (2) (3) (4) (b) Which group contains elements whose atoms form ions with a 2+ charge?
b) Give the symbol of the element that has a relative atomic mass of 12. (1) Give the number of the group that contains the noble gases. (1)
b) Give the symbol of the element that has a relative atomic mass of 12. (1) Give the number of the group that contains the noble gases. (1)
(1 Give the number of the group that contains the noble gases. (1
c) Give the number of the group that contains the noble gases. (1)
(1
(1
d) Which group contains elements whose atoms form ions with a 2+ charge?
(1
(e) Which group contains elements whose atoms form ions with a 1- charge?
(1
(Total 5 marks)

(u) Where in the ucc	tom are the protons and neutrons?	
(b) Which type of p	particle in the atom is in orbits (shells)?	(1)
(a) Which are of th	ha martialas has a masitiva abarca?	(1)
	he particles has a positive charge?	(1)
d) Which two part	ticles have approximately the same mass?	
e) What name is gineutrons?	given to atoms of the same element which contain differe	(1) ent numbers of
	(Te	(1) otal 5 marks)

(a)	Name the two substances in damp air that react with the iron.
<i>(u)</i>	
	1
	2(2)
(b)	What is the brown layer?
	(1)
(c)	The reaction between iron and damp air can be prevented by covering the iron with another material. Name two materials that can be used.
	1
	2(2)
	(Total 5 marks)



_	drochloric acid.	or injurogen gas rommi	g when a piece of zinc is a	idaed to
(a) Com	plete the diagram to	show the bubbles formi	ng in the other two test tube	es.
		iron	magnesium	(2)
(b) Write	e a word equation for	the reaction between z	inc and dilute hydrochloric	acid.
•••••				(1)
(c) Name acid.	e one metal that doe	s not form bubbles who	en it is added to dilute hydr	ochloric
				(1)
•••••				

(Total 6 marks)

As	student tests a solution to see if it contains CO_3^{2-} ions.	
Th	e first part of this test involves this reaction:	
	$2H^{+}() + CO_{3}^{2-}(aq) \rightarrow H_{2}O() + CO_{2}()$	
(a)	One state symbol is given in the equation. Write the other state symbols in the spanning of	aces
	provided.	(3)
(b)	Name a reagent that can be used to provide the H ⁺ ions in the reaction.	
		(1)
(c)	Give the name for each of the following formulae:	()
(0)	$\mathrm{CO_3}^{2-}$	
	CO ₂	(2)
(d)	The second part of the test involves using Ca(OH) ₂ to detect the CO ₂ .	
	(i) What is the chemical name for $Ca(OH)_2$?	
		(1)
	(ii) The Ca(OH) ₂ is dissolved in water to make a solution when doing the test CO ₂ . What is the common name for this solution?	foi
		(1)
	(iii) What is seen during this test for CO ₂ ?	
		(1)
	(iv) Complete the chemical equation for the reaction between these two substance	es.
	$Ca(OH)_2 + CO_2 \rightarrow \dots + \dots + \dots$	/ a `
(e)	CO_2 is present in air. What effect does it have on rain water?	(2)
(0)	202 to present in air. What effect does it have on fair water:	
		(1)
	(Total 12 mar	·ks)

6.	Cru	ude oil is a mixture of hydrocarbons.	Leave blank
		Which two elements are present in the compounds in crude oil?	
	(a)	which two elements are present in the compounds in crude on:	
		and(2)	
	(b)	Crude oil is separated into fractions by heating and passing the vapour into a fractionating column. Explain why the fractions separate in the column.	
		(2)	
	(c)	Two of the fractions are gasoline and bitumen. Give one use of each.	
		Use of gasoline	
		Use of bitumen	
		(2)	
	(d)	Name two fractions formed in the fractional distillation of crude oil, other than gasoline and bitumen.	
		1	
		2(2)	
	(e)	(i) Identify the two products of complete combustion of hydrocarbons.	
		1	
		2(2)	
		(ii) Explain why the incomplete combustion of hydrocarbons is harmful to humans.	
		(2)	Q6
		(Total 12 marks)	
		TOTAL FOR SECTION A: 45 MARKS	

SECTION B

7. Hydrogen peroxide decomposes into water and oxygen.

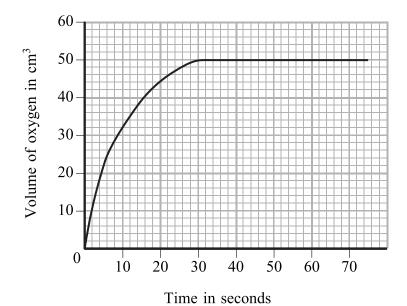
$$2H_2O_2 \rightarrow 2H_2O + O_2$$

The reaction is very slow but becomes faster if manganese(IV) oxide is added. The manganese(IV) oxide does not get used up during the reaction.

(a) What is the role of the manganese(IV) oxide in this reaction?

(1

(b) The graph shows how the volume of oxygen collected changed with time when 1 g of small lumps of manganese(IV) oxide were added to 10 cm³ of hydrogen peroxide.



Sketch on the axes above the results obtained when

(i) the experiment is repeated using 1 g of powdered manganese(IV) oxide. Label this sketch **A**.

(2)

(ii) the same volume of hydrogen peroxide is used but 5 cm³ of water is added to it before the manganese(IV) oxide is added.

Label this sketch **B**.

(2)

(c) Describe a test for oxygen gas.

Test

Result(2)

Q7

(Total 7 marks)

8. The decomposition of ammonium chloride is a reversible reaction.

$$NH_4Cl(s) \rightleftharpoons NH_3(g) + HCl(g)$$

(a) How is this reaction made to go in the **forward** direction?

(1)

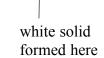
(b) Concentrated hydrochloric acid gives off hydrogen chloride gas. Concentrated ammonia solution gives off ammonia gas.

An experiment is set up.

cotton wool soaked in concentrated glass soaked in concentrated hydrochloric acid tube ammonia solution

After a few minutes a white solid forms inside the tube. The solid forms when ammonia gas reacts with hydrogen chloride gas.

cotton wool cotton wool soaked in concentrated glass soaked in concentrated hydrochloric acid tube ammonia solution



(i) Name the process by which the ammonia and hydrogen chloride particles move inside the tube.

(1)

(ii) What is the white solid that forms inside the tube?

(1)

		(
(iv) The experiment is repeated wi inside of the tube.	th a strip of da	amp red litmus paper placed along the
cotton wool soaked in concentrated	glass	cotton wool soaked in concentrated
hydrochloric acid	tube	ammonia solution
A	B	- Guri
A	Б	damp red
		litmus paper
		(
		(
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		(

	7
Leave	
Leave	
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9 T	'he alkenes are	a homologous	series of un	saturated	hydrocarbons

(a)	(i)	Tick two	boxes	that	are	correct	statements	about	members	of	an	homologo	us
		series.											

They have similar chemical properties

They have the same displayed formula

They have the same general formula

They have the same physical properties

They have the same relative formula masses

(2)

(ii) What is meant by the term **unsaturated**?

	••••
	<u>(1</u>)

(1

(b) Alkenes react with bromine water. Ethene is the simplest alkene.

(i)	Bromine water is added to ethene.	State the starting and finishing colours of the
	reaction mixture.	

Colour at start

Colour at finish(2)

(ii) Complete the equation by drawing the displayed formula of the product.

$$Br-Br + C=C \rightarrow H H$$

(1)

			Leave blank
1	(c)	Isomers are compounds that have the same molecular formula but different displayed formulae.	
		Draw the displayed formulae of \mathbf{two} isomers that have the molecular formula C_4H_8 .	
		(2) (Total 8 marks)	Q9
		(Total o marks)	

10. Sodium	is a very reactive metal. It floats on water and reacts rapidly with water.
	piece of sodium is placed in a trough of water. A reaction takes place and en gas is given off.
(a) (i)	Give two observations, other than the sodium floating, that you could make during the reaction.
	1
	2(2)
(ii)	Write a word equation for the reaction.
	(1)
(iii)	Universal indicator is added to the water in the trough. State what colour it turns and explain why.
	Colour
	Explanation
	(2)

14

	Leav
(b) A piece of sodium is heated in a Bunsen flame. The sodium catches fire and rewith the oxygen in the air. The product is sodium oxide.	blar
(i) The diagrams show the electron arrangement in an atom of sodium and an a of oxygen.	atom
(Na) (Na) (Na) (Na) (Na) (Na) (Na) (Na)	
Sodium oxide contains ionic bonds. Describe what happens, in terms of electrons when sodium reacts with oxygen.	rons,
	(3)
(ii) What is the chemical formula of the sodium oxide made in this reaction?	
	(1) Q10
(Total 9 ma	rks)
TOTAL FOR SECTION B: 30 MAI	
TOTAL FOR PAPER: 75 MAI	RKS



END

