[2]

ICSE-1994

Section A (40 Marks) (Attempt all questions from this section)

Question 1

- (a) Answer the following:-
 - (i) Name the change of state in which naphthalene changes into vapour.

(ii) Name an element which can undergo the same change of state

(iii) Name a common substance which exists in all the three state of matter.

v) Dilute hydrochloric acid is added in turn to a mixture of iron and sulphur and to the compound formed between iron and sulphur. Name the gas formed in each case.

(b) Place the metals <u>calcium, iron, magnesium and sodium</u> in order of their activity with water, place the most active first.

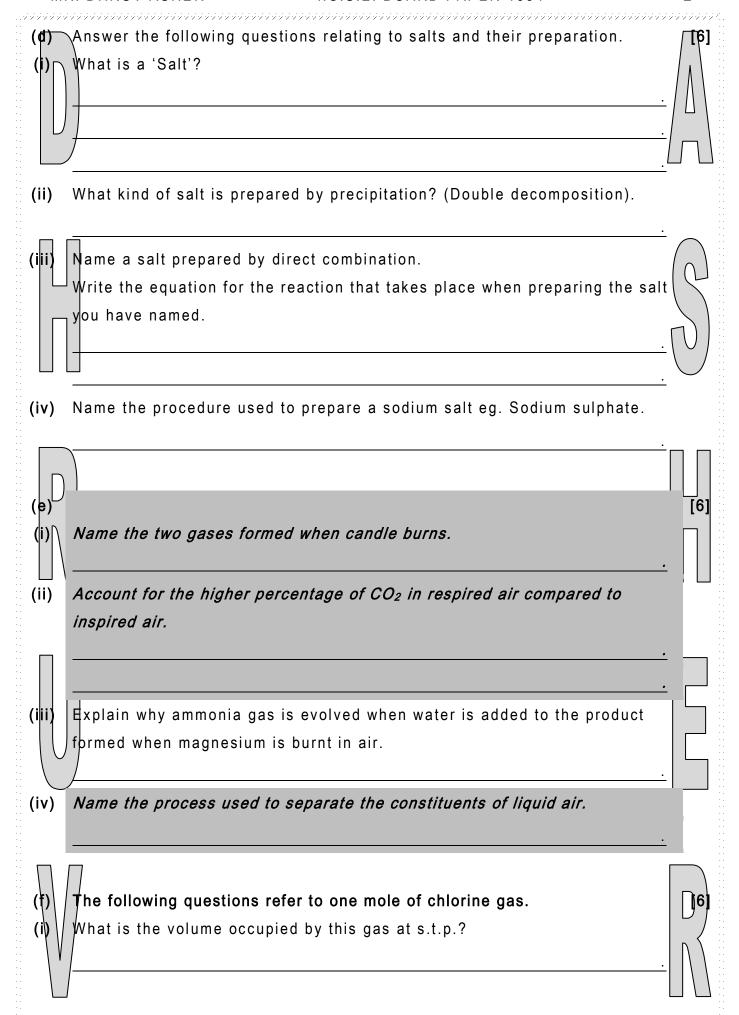
(ii) Write equations for each of the above metals which react with water.

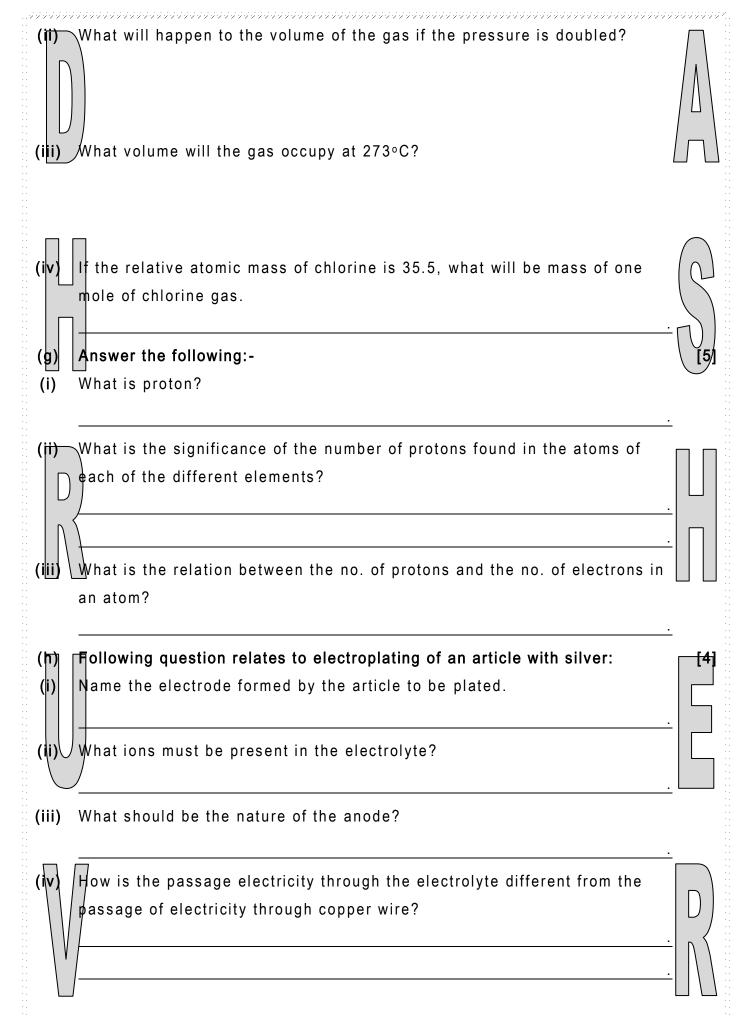
(c) What do you see when each of the following elements is burnt in oxygen?

- - (2) Sulphur.______

(ii) What type of oxide is formed when each of the following element is burnt in oxygen?

- (1) Phosphorus ______
- (2) Magnesium.





Section – B (40 marks) (Attempt any four questions from this section) Question 2 (a) Vame the ions present in each following components: (i) Compound A when warmed with concentrated sulphuric acid gives a gas which fumes in moist air and which gives dense white fumes with ammonia. When barium chloride solution is added to a solution of compound B, a white precipitate insoluble in dilute hydrochloric acid is formed. Action of heat on insoluble compound C produces a gas which turns lime water turbid. (iv) Compound D when warmed with dilute sulphuric acid gives a gas which turns acidified potassium dichromate solution green. Write balanced equations for action of heat on following compound: Potassium chlorate \$odium hydrogen carbonate **d**opper nitrate (c) Name a substance which could be mixed with potassium chlorate so that it would decompose faster Describe all that you would see when copper nitrate is heated.

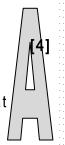
ELEMENT	ATOMIC	MASS	NUMBER OF		
	NUMBER	NUMBER	PROTONS	NEUTRONS	ELECTRON
Beryllium	4	9			
Fluorine	9			10	
Sodium				12	11
Aluminium		27	13		
Phosphorus		31			15
j) Aluminium; ii) Phosphoru Show the form	IS.		chloride mole	ecule using an	<u>·</u> <u>·</u> · electron 'de
and cross' dia	gram.				
State two differences	erences yo			oetween the p	

Que	estion 4
(a)	The following statements are correct only under certain conditions. Rewrite each statement including the appropriate condition(s) underlined in your
	answer.
	For example:
	Statement: Sodium chloride reacts with silver nitrate forming a precipitate
	of silver chloride.
	Correct statement: Sodium chloride solution reacts with silver nitrate
	solution forming a precipitate of silver chloride.
(i) _	Oxalic acid reacts with sulphuric acid to produce carbon monoxide and
	darbon dioxide.
	<u> </u>
	<u> </u>
(ii)	Chlorine reacts with sodium hydroxide solution to produce sodium chlorate.
(iii)	Copper and nitric acid react together producing nitrogen dioxide.
	<u> </u>
	<u> </u>
(iv)	Sulphur dioxide is a beaching agent.
(b)	Write equations for the following reactions:
(i <u>)</u> \	Formation of sodium chlorate from sodium hydroxide.
(ii)	Production of nitrogen dioxide using copper.
	<u> </u>
(i jii)	Garbon monoxide acting as a reducing agent.
(iv)	Sulphur dioxide acting as an oxidizing agent.
	·
(d)	
(i) <u> </u>	How would you remove the carbon dioxide from a carbon dioxide and
(***)	carbon monoxide mixture?
(ii) □	Why is copper not used to prepare hydrogen by the action of dilute
	hydrochloric acid or dilutesulphuric acid on the metal?
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$\setminus \bigvee$	<u> </u>
\	<u> </u>



(a) An acid of phosphorus has the following percentage composition: 2.47% hydrogen, 38.27% phosphorus, 59.26% oxygen.

find the empirical formula of this acid and its molecular formula, given that its relative molecular mass in 162. (H=1, O=16, P=31).

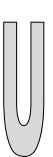




Phosphorus has several allotropes. Name two other elements which also have allotropes.

The reaction between aluminium carbide and water takes place according to the following equation: Al₄C₃ + 12H₂O \rightarrow 3CH₄ + 4Al(OH)₃

Calculate the volume of methane (CH_4), measured at s.t.p., released from 14.4 g of aluminium carbide by excess water. (C=12, Al=27)



Write the equation for the action of heat on aluminium hydroxide.



