



**DELHI PUBLIC SCHOOL NEWTOWN**  
**SESSION: 2020-2021**  
**ANNUAL EXAMINATION (ONLINE)**

**CLASS: IX**  
**SUBJECT: CHEMISTRY**

**FULL MARKS:50**  
**TIME: 1 HOUR 30 MINUTES**

**Instructions:**

- This paper consists of four printed pages.
- Copy the question numbers carefully before answering the questions.

**SECTION I (10 Marks)**  
*Attempt all questions from this section*

**Question: 1**

- a) State one relevant observation for each of the following reactions:
- i) Hydrogen sulphide gas is passed through copper (II)sulphate solution.
  - ii) Solid ammonium dichromate is heated strongly in a test tube.
  - iii) Concentrated sulphuric acid is added to blue vitriol.
  - iv) Ferrous sulphate crystals are heated in a dry boiling tube.
  - v) Caustic soda solution is added to ferrous sulphate solution. [5]
- b) Write the balanced chemical equation for each of the following reactions:
- i) Thermal dissociation of dinitrogen tetroxide
  - ii) Silver chloride is exposed to sunlight
  - iii) Slaked lime is added to dry ammonium chloride.
  - iv) Steam is passed over red hot iron.
  - v) Action of heat on solid copper (II) nitrate. [5]

**SECTION II (40 Marks)**  
*Attempt any four questions from this section*

**Question: 2**

- a) Solve the following numericals:
- i) Calculate the percentage of the metal in Epsom salt. ( $Mg=24$ ,  $S=32$ ,  $O=16$ )
  - ii) If 10.0 litres of oxygen at STP is heated to  $512^{\circ}C$ , what will be the new volume of gas if the pressure is also increased to 152.0mm of mercury?
- b) About  $2\text{cm}^3$  of water is boiled in a hard glass test tube, so that steam comes out freely. Into this test tube a burning magnesium ribbon is lowered.
- i) State your observation and write the fully balanced equation for the chemical reaction takes place here.
  - ii) Why does the above reaction stop in a few minutes?

- c) The formula of magnesium oxide is  $MgO$ . State the formula of barium chromate and barium sulphate , if barium belongs to the same group as magnesium. [3+2+2+1+2=10]

**Question: 3**

- a) In the formation of the compound  $XY_2$ , an X atom gives one electron to each Y atom.
- State the nature of bond in  $XY_2$ .
  - Draw the orbit structure of this compound.
  - What will be formula of the compound formed between X and oxygen?
- b) Write the oxidizing agent (OA), reducing agent (RA), in the following reactions:
- $2NH_3 + 3Cl_2 \rightarrow N_2 + 6HCl$
  - $2HgCl_2 + SnCl_2 \rightarrow Hg_2Cl_2 + SnCl_4$
  - $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$
- c) Study the table given and answer the following questions:

Atom	Atomic No.
A	11
B	17

- Locate the position of A and B in the Modern Periodic Table
- Write equations for the formation of the ions of A and B.

[3+3+2+2=10]

**Question: 4**

- a) A small piece of calcium metal is put into a small trough containing water. There is an effervescence of gas and a white turbidity is formed.
- Name the gas formed in the reaction.
  - Give one chemical test for the identification of the gas.
  - Write an equation for the reaction taking place.
  - What would you observe when few drops of red litmus is added to the turbid solution?

- b) In the following table are given eight elements A, B, C, D, E, F, G and H(here letters are not the usual symbols of the elements) of the Modern Periodic Table with the atomic numbers of the elements in parenthesis.

Period	Group 1	Group 2
2	A(3)	E(4)
3	B(11)	F(12)
4	C(19)	G(20)
5	D(37)	H(38)

- i) What is the electronic configuration of F?
  - ii) What is the number of valence electrons in the atom of H?
  - iii) What is the number of shells in D?
  - iv) Write the formula of the oxide of C.
  - v) State the nature of the compound formed between B and hydrogen.
- c) Give a balanced equation for the reaction between steam and a non metal.

[5+4+1=10]

#### Question: 5

- a) Give reasons for the following:
  - i) Nitric acid cannot be used during laboratory preparation of hydrogen.
  - ii) Sodium cannot be used to obtain hydrogen from acids.
  - iii) Fused calcium chloride is used in desiccators.
- b) Convert the following word equations into balanced chemical equations:
  - i) Magnesium nitride reacts with warm water to produce magnesium hydroxide and ammonia.
  - ii) Dilute sulphuric acid when added to cupric oxide gives copper sulphate and water.
  - iii) Carbon disulphide when burns in air produces carbon dioxide and sulphur dioxide.
- c) When a white sample M is strongly heated, it produces a residue N which is yellow when hot and white when cold. The heating also produces a neutral gas O which rekindles a glowing wooden splinter and a reddish brown gas P which has an irritating odour and dissolves in water to produce two acids. Identify M, N, O and P.

[3+3+4=10]

**Question: 6**

- a) Complete the table given below:

Atom	Mass No	Atomic No	No. of neutrons
$^{60}\text{Co}_{27}$	(i)	(ii)	(iii)
$^{108}\text{Ag}$	(iv)	47	(v)

- b) At constant pressure, a gas at  $-33^{\circ}\text{C}$  is heated to  $127^{\circ}\text{C}$ . Find the percentage increase in volume of the gas.
- c) Draw the electron dot and cross structure of carbon tetrachloride molecule.
- d) Name the following:
- The element in period 3 which is a monoatomic unreactive gas.
  - The group name given to the type of elements present in group 3 to 12.

[5+2+1+2=10]