HALF YEARLY EXAMINATION – 2020

CLASS- IX

TIME: 2 hrs **CHEMISTRY** **M.M.: 80**

NOTE- You will not be allowed to write during first fifteen minutes. This time is to be spent in reading question paper. The time given at the head of the question paper is the time allowed for writing the answer.

Section A is compulsory. Attempt any four questions from section B.

SECTION – A (40 Marks)

(Attempt all questions)

a. Choose the correct answer from the choices: [5]

i. Loss of electron is:
   - A. Oxidation
   - B. Reduction
   - C. Redox reaction
   - D. Displacement

ii. Standard value of pressure is:
   - A. 76 mm
   - B. 760mm
   - C. 2.5 atm
   - D. 760 cm

iii. Type of bond in Nitrogen molecules:
   - A. Ionic bond
   - B. Three single covalent bond
   - C. Triple covalent bond
   - D. Coordinate bond

iv. Valency of nitrogen in N_2O_5 is:
   - A. 2
   - B. 3
   - C. 4
   - D. 5

v. The number of neutrons in Hydrogenis:
   A. zero
   B. One
   C. Two
   D. Three

b. Define: [5]
   i. Boyle's Law
   ii. Absolute zero
   iii. Mass number
   iv. Isotopes
   v. Radicals

c. Write chemical formula of following compounds: [5]
   i. Calcium nitrate
   ii. Zinc chloride
   iii. Aluminium phoshphate
   iv. Potassium carbonate
   v. Sodium sulphate

d. Balance the following equations: [5]
   i. $Pb(NO_3)_2 \longrightarrow PbO + NO_2 + O_2$
   ii. $NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O$
   iii. $Fe + H_2O \longrightarrow Fe_3O_4 + H_2O$
   iv. $CH_4 + O_2 \longrightarrow CO_2 + H_2O$
   v. $CaCO_3 + HCl \longrightarrow CaCl_2 + H_2O + CO_2$

e. State the symbol and valency of following radicals: [5]
   i. Ammonium
   ii. Ferric
   iii. Hydroxide
   iv. Barium
   v. Sulphide

f. Match the columns: [5]

i) Cm^3	Pressure
ii) Kelvin	$PV= P_1V_1$
iii) Torr.	Volume
iv) Boyle's Law	$V/T = V_1/T_1$
v) Charle's Law	Temperature

g. Name the following: [5]

i. A greenish yellow gas.
ii. A reddish- brown gas.
iii. A light green carbonate which gives black residue on heating.
iv. A metal with variable valency.
v. A gas with foul smell of rotten eggs.

h. Fill in the blanks: [5]

i) Neutrons are electrically ___.
ii) Metals form____ ions.
iii) On heating, Hydrated copper sulphate turns ____ to white.
iv) ____is equal to number of protons in an atom.
v) ____ is the reaction of acid with base to give salt and water.

SECTION –B (40 Marks)

(Attempt any four questions)

2. a. Calculate the percentage of **nitrogen** and **carbon** in urea, NH_2CONH_2. [4]

[Atomic mass: N= 14, C=12, O=16, H=1]

b. State the type of reaction: [4]

i. $2H_2O_2 \longrightarrow 2H_2O + 3O_2$

ii. $Fe + CuSO_4 \longrightarrow FeSO_4 + Cu$

iii. $AgNO_3 + NaCl \longrightarrow AgCl + NaNO_3$

iv. $PbO_2 + SO_2 \longrightarrow PbSO_4$

c. State the following: [2]

i. Absolute temperature of a gas at 7^0C.
ii. A bond formed by mutual sharing of electrons.

Question 3.

a)State one relevant observation in each case: [4]

i) Lead nitrate crystals are heated in a test tube.
ii) Water is added to quicklime.
iii) Carbon di oxide gas is passed through lime water.
iv) A piece of iron is added to blue solution of copper sulphate.

b. Draw electron dot structure of: [4]

i. Sodium chloride ii. Ammonia

c. Complete the statement by filling word/words given in brackets: [2]

The volume of a gas becomes ____ (double/half/ remain same), when the pressure is doubled at constant _____(temperature/ pressure).

Question 4.

a. Give reason: [6]

i. Gasses are highly compressible.
ii. Inert gases do not react.
iii. The physical properties of isotopes are different.

b. Elements X, Y andZ have atomic numbers 9, 10 and 19 respectively: [4]

i. Write electronic configuration of Z.

ii. Which element is metal.

iii. Which element is non -metal.

iv. State the valency of Y.

Question 5.

Write the balanced chemical equations of the following reactions:[10]

a. silver nitrate $\longrightarrow$ silver + nitrogen dioxide + oxygen

b. Iron + sulphuric acid $\longrightarrow$ Iron (II) sulphate + hydrogen

c. Ammonia + oxygen $\longrightarrow$ nitrogen + oxygen

d. Potassium iodide + Chlorine $\rightarrow$ potassium chloride + iodine

e. Calcium + water $\longrightarrow$ calcium hydroxide + hydrogen

Question 6.

a). A sample of carbon dioxide occupies $30cm^3$ at 27^0C and 760mm pressure. Find its volume at 127^0C and 380mm pressure. [4]

b). Differentiate the following pairs: [4]

i. Exothermic and Endothermic reactions
ii. Cations and Anions

c). Draw atomic structure of following elements: [2]

i. $_{16}S^{32}$
ii. $_{13}Al^{27}$

Question 7.

a). Study the table given below and answer the following questions:[4]

Element	Mass number	Atomic number
A	14	7
B	40	20
C	32	16
D	40	18

i) Identify the element with 5 valence electrons.
ii) Identify the element with zero valency.
iii) Identify the element with +2 valency.
iv) Identify the element with -2 valency

b). Names the three isotopes of Hydrogen. Draw their structures. [4]

c). Convert the following temperatures: [2]

i. 37 K to Celsius
ii. 27^0 C to Kelvin

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