the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1 The number of moles of CO_2 which contain 16 g of Oxygen
(A) 0.25 (B) 0.50 (C) 1.0 (D) 1.5

2 The number of isotopes of Tin are
(A) 3 (B) 7 (C) 9 (D) 11

3 Solvent extraction is an equilibrium process and is
(A) Law of mass action (B) Distribution law (C) The amount of solvent used
(D) The amount of solute used

4 The partial pressure of oxygen in air is
(A) 116 torr (B) 159 torr (C) 180 torr (D) 190 torr

5 The order of rate of diffusion of gases NH_3, SO_2, Cl_2 and CO_2 is
(A) $NH_3 > SO_2 > Cl_2 > CO_2$ (B) $NH_3 > CO_2 > SO_2 > Cl_2$ (C) $Cl_2 > SO_2 > CO_2 > NH_3$
(D) $NH_3 > CO_2 > Cl_2 > SO_2$

6 When water freezes at 0 °C its density decreases due to
(A) Cubic structure of Ice (B) Empty spaces present in structure of Ice (C) Change of bond
(D) Change of bond angle

7 The molecules of CO_2 in dry ice forms the
(A) Ionic crystals (B) Covalent crystals (C) Molecular crystals (D) Metallic crys

8 When 6 d orbital is complete the entering electron goes into
(A) 7 f (B) 7 s (C) 7 p (D) 7 d

9 Which of following molecule has zero dipole-moment
(A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3

10 In endothermic reaction the heat content of
(A) Product is more than that of reactants (B) Reactants is more than that of products
(C) Surrounding increases (D) Reactant and product is equal

11 Enthalpy of atomization of Na-metal is
(A) 90 kj/mole (B) 108 kj/mole (C) 120 kj/mole (D) 130 kj/mole

12 pH of human blood is maintained at
(A) 7.0 (B) 7.35 (C) 8.0 (D) 8.5

13 The solubility product of AgCl is 2.0×10^{-10} mol^2 dm^{-6}. The maximum concentration of solution is
(A) 2.0×10^{-10} mol dm^{-3} (B) 1.41×10^{-5} mol dm^{-3} (C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-3}

14 18 g glucose is dissolved in 90 g of water the relative lowering of vapour pressure is equal
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

15 The oxidation number of oxygen in OF_2 is
(A) + 1 (B) + 2 (C) - 2 (D) - 1

16 If salt bridge is not used between two half cells the voltage
(A) Decreases rapidly (B) Decreases slowly (C) Does not change (D) Drop to ze

17 The unit of rate constant is same as that of rat of reaction in
(A) First order reaction (B) Second order reaction (C) Third order reaction (D) Zero order re

DGK GRP-1

CHEMISTRY
GROUP : FIRST

11th CLASS – 1st Annual 2023

SUBJECTIVE
SECTION-I

TIME : 2:40 HOURS
MARKS : 68

QUESTION NO. 2 Write short answers of any Eight (8) parts of the following 16

i	Calculate the mass in kilogram of 2.6×10^{20} molecules of SO_2
ii	Name any four methods for the separation of isotopes
iii	Differentiate between ion and molecular ion
iv	What is the difference between natural and artificial plasma ?
v	Derive Boyle's law from kinetic molecular theory of gases
vi	Gases deviate from ideal behavior more at 0 °C than at 100 °C . Give the reason
vii	What do you mean by line spectrum ? Give an example
viii	Write down the reactions when slow neutrons hit the copper metal
ix	What is $n + \ell$ rule ?
x	Define standard enthalpy of formation. Give an example
xi	Define the term heat and work
xii	What are endothermic reactions ? Give an example

DGK GRP-1

QUESTION NO. 3 Write short answers of any Eight (8) parts of the following 16

i	Define heat of hydration. Give example
ii	How do you justify that freeing points are depressed due to the presence of solutes ?
iii	What do you mean by discontinuous solubility curve ?
iv	Differentiate between Homogeneous and Heterogeneous catalysis
v	How the mechanism of a chemical reaction can help to point out the rate determining step ?
vi	What is the effect of temperature on the activation energy of a reaction ?
vii	Define sublimation. Give an example
viii	How desiccator is used to dry the catalysts ?
ix	What is solvent extraction ?
x	Define cleavage plane. Give an example
xi	Water and the ethanol can mix easily in all proportions. Why ?
xii	How will you Justify that the structure of ice is just like that of diamond ?

QUESTION NO. 4 Write short answers of any Six (6) parts of the following 12

i	Define bond order. Give an example
ii	What is bond energy ? Give an example
iii	What is AB_3 type molecule according to VSEPR theory ? Give an example
iv	What is Le Chatlier's principle ?
v	What is common ion effect ? Give an example
vi	How equilibrium constant k_c is helpful in prediction of direction of reaction ?
vii	What is voltaic cell ?
viii	What is the function of salt bridge ?
ix	What is Nickel-Cadmium battery ?

SECTION-II

Note: Attempt any Three questions from this section

Q.5 (A)	Define yield. Differentiate between actual and theoretical yield. How percentage yield can be calculated	1+2+1
(B)	250 cm^3 of hydrogen is cooled from 127 °C to - 27 °C by maintaining the pressure Constant. Calculate the new volume of the gas at this low temperature	4
Q.6 (A)	Define ionic solids. Discuss properties of ionic solids in detail	4
(B)	Define enthalpy of neutralization. Also discuss the glass calorimeter in detail	4
Q.7 (A)	Write down measurement of e/m value of electron by J.J. Thomson with diagram	3+1
(B)	The solubility of PbF_2 at 25 °C is 0.64 g cm^{-3} . Calculate the Ksp molar mass of Pb is 207 g. $mole^{-1}$ F = 19 g. $mole^{-1}$	4
Q.8 (A)	What is MOT ? How it explain the structure of oxygen molecule	4
(B)	Explain fuel cell in detail	4
Q.9 (A)	What are colligative properties ? Explain lowering of vapour pressure	1+3
(B)	Write four characteristics of a catalyst	1+1+1+1