DGK-02-11-19

CHEMISTRY (NEW COURSE) **OBJECTIVE** TIME: 20 MINUTES
GROUP SECOND MARKS: 17
ACADEMIC SESSION : 2015 – 2017 TO 2018 – 2020

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill 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 that contains 0.5 mole of Oxygen is
(A) 0.25 (B) 0.50 (C) 1.0 (D) 1.5

2 The mass of one mole of electrons in milligrams is
(A) 1.008 (B) 0.5500 (C) 0.1840 (D) 1.673

3 Gooch crucible is made of
(A) Glass (B) Paper (C) Teflon (D) Porcelain

4 The highest temperature at which a substance can exist as liquid state at its critical pressure is
(A) Absolute zero (B) Consulate temperature (C) Critical temperature (D) Transition temperature

5 The volume occupied by 1.4g N_2 at STP is
(A) 2.24 dm^3 (B) 22.4 dm^3 (C) 1.12 dm^3 (D) 112 cm^3

6 The molecules of CO_2 in dry ice forms the crystal of type
(A) Ionic (B) Covalent (C) Molecular (D) Metallic

7 Transition temperature of S_8 (monoclinic) $\rightleftharpoons$ S_8 (Rhombic) is
(A) 13.2 °C (B) 95.5 °C (C) 128 °C (D) 110 °C

8 In the ground state the electrons in atom are present.
(A)Nearest to its nucleus (B) In its nucleus (C) In second shell (D) In last shell

9 Bohr's Atomic Model is contradicted by
(A) Plank's Quantum theory (B) Heisenberg's uncertainty principle
(C) Dual nature of matter (D) Rutherford's Atomic Model

10 Following halide has highest ionic character
(A) HBr (B) HCl (C) HF (D) HI

11 The carbon atom in C_2H_4 uses following orbitals for making covalent bonds
(A) Sp^3 (B) Sp^2 (C) Sp (D) dsp^2

12 One thermal calorie is equivalent to
(A) 0.418 J (B) 4.18 J (C) 41.8 J (D) 418 J

13 Consider following reaction as equilibrium , $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ $\Delta H = -188Kj^{-1}$
The correct statement about above reaction is
(A) Value of Kp decreases with increase in temperature
(B) Value of Kp decreases with increase in pressure
(C) Adding catalyst (V_2O_5) increase yield SO_3 (D) Value of Kp is equal to Value of Kc

14 The molal boiling point constant is the ratio of elevation in boiling point to
(A) Molarity (B) Molality (C) Mole fraction (D) Percentage composition

15 An aqueous solution of ethanol (C_2H_6O) in water has vapour pressure.
(A) Equal to that of ethanol (B) Equal to that of water
(C) More than that of water (D) Less than that of water

16 The standard electrode potential (in volt) of SHE is taken as
(A) 0.00 (B) 1.00 (C) 10.0 (D) 100

17 In zero order reaction the rate of reaction is independent of
(A) Temperature of reaction mixture (B) Concentration of reactants
(C) Concentration of products (D) Pressure on reaction mixture

DGK-G2-11-19

CHEMISTRY (NEW COURSE) | SUBJECTIVE | TIME: 2:40 HOURS
GROUP SECOND | SECTION-I | MARKS: 68
ACADEMIC SESSION : 2015 – 2017 TO 2018 –2020

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

1	Why experimental yield is less than that of theoretical yield?.
2	Define molecular formula. How it is related with empirical formula.
3	Law of conservation of mass has to be obeyed during stoichiometric calculation .Justify
4	How coloured impurities are removed from a crystalline substance?
5	Give two uses of chromatography.
6	Why pilots feel uncomfortable breathing at higher altitude?
7	State Graham's law of diffusion along with mathematical form.
8	Give two applications of Plasma.
9	Why lighter gases diffuse more rapidly as compare to heavier gases?
10	Why Molarity is temperature dependent but Molality is temperature independent.
11	Define colligative properties. Why they are so called?
12	Give two applications of colligative properties.

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

1	Why heat of sublimation is greater than heat of vaporization ?
2	Why did the boiling point of noble gases increase within a group ?
3	Define amorphous solids and give two examples.
4	Heat of sublimation of iodine is very high. Justify.
5	How will you prove that cathode rays possess momentum?
6	Prove that $E = hc\bar{\upsilon}$
7	Why boiling point of water varies from sea level to Murree Hills?
8	How do you come to know that velocity of electron in higher orbit are less than in lower orbit?
9	Give equilibrium constant expression (Kc) for $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$
10	Give optimum conditions for synthesis of Ammonia gas by Haber's process.
11	The order of reaction may be in fraction. Explain.
12	A particular catalyst is suitable for a particular reaction. How do you explain ?

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

1	Define coordinate covalent bond with an example.
2	Differentiate between polar and non polar covalent bond.
3	Define bond order. Calculate the bond order of Nitrogen molecule.
4	H_2O is an angular molecule where as CO_2 is linear. Why?
5	State first law of thermodynamics Give its mathematical form.
6	Why is it necessary to mention the physical state of reactants and products in a thermo-chemical equation?
7	Define electrochemistry.
8	Calculate oxidation number of chromium in $K_2Cr_2O_7$ and $K_2Cr\ O_4$
9	Na and K can displace Hydrogen from dilute acid but Pt and Cu cannot. Justify it

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5 -(A)	What is a limiting reactant ? How does it control the quantity of the product formed ? Explain with examples.
(B)	Write four properties of covalent solids.
Q.6 -(A)	Calculate the mass of 1dm^3 of NH_3 gas at 30 °C and 1000 mmHg pressure, considering that NH_3 is behaving ideally.
(B)	How J. J. Thomson determine the e/m value of electron by discharge tube?
Q.7 -(A)	Define hybridization. Explain sp^2 hybridization with one example ?
(B)	How the enthalpy of combustion is measured by bomb calorimeter?
Q.8 -(A)	The solubility of PbF_2 at 25 °C is 0.64 gm^{-3}.Calculate Ksp of PbF_2 (Molar mass of PbF_2 = 245.2)
(B)	Discuss any four physical methods to determine rate of a reaction..
Q.9 -(A)	Write note on (i) Hydration (ii) Hydrolysis
(B)	Describe the construction and working of standard Hydrogen electrode.