Roll No. : _____

Objective
Paper Code
6481

Intermediate Part First (New Scheme)
CHEMISTRY (Objective)
Time: 20 Minutes Marks: 17

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.**

S.#	Questions	A	B	C	D
1	The number of moles of hydrogen atoms in 92g alcohol (C_2H_5OH) are:	5 moles	6 moles	10 moles	12 moles
2	The number of moles of CO_2 which contain 8.0g of oxygen:	1.50	1.0	0.50	0.25
3	The comparative rates at which the solute move in paper chromatography depend on:	Size of paper	R_f values	Temperature	Size of chromatographic tank
4	The gases show more deviation at:	Low temperature and low pressure	High temperature and low pressure	High temperature and high pressure	Low temperature and high pressure
5	The liquid having highest boiling point is:	Hydrofluoric acid	Water	Hydrogen sulphide	Ammonia
6	Which impurity makes the shape of sodium chloride crystal needle like:	$MgSO_4$	Urea	Glucose	$MgCO_3$
7	When one beta (β) particle is emitted from the nucleus of an atom its:	Atomic number increases by 1	Atomic number decreases by 1	Atomic mass increases by 1	Atomic mass decreases by 1
8	The charge on proton is:	$1.6022\times10^{-11}C$	$1.6022\times10^{11}C$	$1.6022\times10^{-19}C$	$1.6022\times10^{19}C$
9	In nitrogen molecule (N_2), each nitrogen atom contributes in sharing for formation of bond:	One electron	Two electrons	Three electrons	Four electrons
10	Which one has highest value of ionization energy:	Be	C	O	F
11	The pressure of oxygen in bomb calorimeter is:	10 atm.	15 atm.	20 atm.	25 atm.
12	For which system does the equilibrium constant, K_c has units of $(concentration)^{-1}$:	A $N_2+3H_2 \rightleftharpoons 2NH_3$		C $2NO_2 \rightleftharpoons N_2O_4$	
		B $H_2+I_2 \rightleftharpoons 2HI$		D $PC\ell_5 \rightleftharpoons PC\ell_3+C\ell_2$	
13	Which one affects the value of K_c ?	Concentration	Temperature	Pressure	Catalyst
14	One molar solution of glucose ($C_6H_{12}O_6$) contains the amount of solute in $500cm^3$ solution:	180g	90g	45g	270g
15	Molarity of pure water is:	1	18	55.5	6
16	The oxidation state of oxygen in KO_2 is:	– 1	– 2	– ½	+ 2
17	The order of reaction for the reaction $2N_2O_5 \rightarrow 2N_2O_4 + O_2$ is:	Zero order	First order	Second order	Third order

Intermediate Part First (New Scheme) Roll No. _____

CHEMISTRY (Subjective)

Time: 02:40 Hours Marks: 68

SECTION – I

2. **Write short answers of any EIGHT parts.** 16

(i) Differentiate between cation and anion.
(ii) Many chemical reactions taking place in our surrounding involve the limiting reactants. Justify it.
(iii) How is percentage (%) yield calculated?
(iv) What is R_f value? Give its unit if any.
(v) How can you dry crystals by different ways?
(vi) Calculate numerical value of R in S.I. units, for one mole of a gas at STP.
(vii) Explain Avogadro's law briefly.
(viii) Define diffusion and effusion of gases.
(ix) What happens to the acidic and basic properties of aqueous solutions when pH varies from zero to 14?
(x) Prepare acidic and basic buffers with one example in each case.
(xi) What will be the effect of increase of pressure and temperature on the following reaction?

$$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)} \quad \Delta H = -92.46kJ$$

(xii) Define solubility product constant and derive solubility product expression for Ag_2CrO_4

3. **Write short answers of any EIGHT parts.** 16

(i) Define allotropy. Give two allotropic forms of carbon.
(ii) Explain that evaporation is a cooling process.
(iii) Define isomorphism with an example.
(iv) What are Debye forces? Explain.
(v) What is bond order? Give an example.
(vi) The dipole-moment of CO_2 is zero but that of CO is 0.12D. Give reason.
(vii) Define Pi (π) bond with an example.
(viii) Bond distance is the compromise distance between two atoms. Explain.
(ix) Prove that $\Delta E = q_v$
(x) Define spontaneous reactions with two examples.
(xi) What is meant by conjugate solutions?
(xii) Define molarity and molality.

4. **Write short answers of any SIX parts.** 12

(i) State Moseley's law. Give its mathematical formula.
(ii) Give two defects of Rutherford's atomic model.
(iii) Why is it necessary to decrease the pressure in the discharge tube to get the cathode rays?
(iv) Write electronic configuration of Cu(29) and Sc(21).
(v) What are secondary cells? Give two examples.
(vi) What is oxidation number? Calculate oxidation number of Mn in $KMnO_4$
(vii) How does a salt bridge maintain the electrical neutrality in a galvanic cell?
(viii) What is heterogeneous catalysis? Give one example.
(ix) Define half life period of a reaction. Give one example.

SECTION – II Attempt any THREE questions. Each question carries 08 marks.

5. (a) What are metallic solids? Discuss their properties. 04
(b) 8.657g of compound were decomposed into elements and gave 5.217g of carbon, 0.962g of hydrogen, 2.478g of oxygen. Calculate the percentage composition of the compound under study. 04

6. (a) Define plasma state. How is it formed? Describe its four applications. 04
(b) Derive the general formula to calculate the radius of 'nth' orbit of H-atom by using Bohr's atomic model. 04

7. (a) Define dipole moment. Give its applications. 04
(b) Define and explain Hess's law of constant heat summation with two examples. 04

8. (a) Define law of mass action. Derive equilibrium constant expression for a given reversible reaction: 04

$$aA + bB \rightleftharpoons cC + dD$$

(b) What is standard hydrogen electrode (SHE)? How is it used to measure the electrode potential of Zinc (Zn). 04

9. (a) 3g of a non-volatile, non-electrolyte solute 'X' are dissolved in 50gm of ether (molar mass = 74) at 293K. The vapour pressure of ether falls from 442 torr to 426 torr. Under these conditions calculate molar mass of solute 'X' 04
(b) What is meant by energy of activation? Explain its importance for chemical reactions. 04