Objective
Paper Code
6483

Intermediate Part First - 903

CHEMISTRY (Objective) GROUP - I

Time: 20 Minutes Marks: 17

Roll No. : _____

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.coi** FBD-GI-22

S.#	Questions	A	B	C	D
1	If rate equation of reaction $2A + B \rightarrow$ Product, is rate = $K[A]^2[B]$ and A is present in large excess, then order of reaction is:	1	2	3	4
2	The oxidation state of 'Mn' in $KMnO_4$ is:	+7	+6	+2	+5
3	18g glucose dissolved in 90gm of H_2O has relative lowering of vapour pressure equal to:	$\frac{18}{90}$	$\frac{1}{6}$	$\frac{10}{51}$	$\frac{1}{51}$
4	pH of human blood is:	7.35	6.35	5.35	4.35
5	For a given process, the heat changes at constant pressure (q_p) and at constant volume (q_v) are related to each other as:	$q_p = q_v$	$q_p < q_v$	$q_p > q_v$	$q_p = \frac{q_v}{2}$
6	Which of the hydrogen halides has the highest percentage ionic character?	HCℓ	HBr	HF	HI
7	Ionization energy for $Mg \rightarrow Mg^+ + 1/e$ has $\Delta H = ?$	738 KJ mol^{-1}	238 KJ mol^{-1}	448 KJ mol^{-1}	138 KJ mol^{-1}
8	Splitting of spectral lines when atoms are subjected to strong electrical field is called:	Zeeman effect	Stark effect	Photoelectric effect	Compton effect
9	De-Brogli equation is represented as:	$h = \frac{\lambda}{mv}$	$m = \frac{h}{\lambda v}$	$m = \frac{h}{\lambda}$	$\lambda = \frac{h}{mv}$
10	The molecules of CO_2 in dry ice form the:	Ionic crystals	Covalent crystals	Molecular crystals	Metallic crystals
11	Density of ice is minimum at 4°C due to:	Empty spaces in structure of ice	Tetrahedral shape of crystal of ice	Large bond lengths	Large bond angles
12	The temperature of a natural plasma is about:	20000°C	1000°C	5000°C	10000°C
13	The deviation of a gas from ideal behaviour is maximum at:	0°C and 2.0 atm	–10°C and 5 atm	100°C and 2 atm	–10°C and 2 atm
14	The technique of chromatography is useful in organic synthesis for:	Separation	Isolation	Purification	All these
15	Separating funnel is used in the technique of analysis:	Crystallization	Filtration	Solvent extraction	Sublimation
16	Nickel has number of isotopes:	3	5	7	2
17	The number of moles of CO_2, which contain 8.0g of oxygen:	0.25	0.50	1.0	1.50

Intermediate Part First

Roll No. _____

CHEMISTRY (Subjective) GROUP - I

Time: 02:40 Hours Marks: 68 FBD-G1-22

SECTION – I

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

(i) Magnesium atom is twice heavier than that of carbon atom. Justify it.
(ii) Many chemical reactions taking place in our surrounding involve the limiting reactants. Give examples.
(iii) Molecular formula is multiple of empirical formula. Give an example.
(iv) How is chromatography classified on the basis of stationary phases?
(v) Define sublimation. Give two examples.
(vi) Write names of four steps of crystallization.
(vii) Calculate the value of general gas constant (R) using S.I. units of pressure and volume.
(viii) What is Joule-Thomson effect?
(ix) Write quantitative definition of Charles's law.
(x) State Le-Chatelier's principle.
(xi) How does equilibrium constant tell about direction of reaction?
(xii) What is the effect of common ion on solubility? Give an example.

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

(i) Amorphous solid like glass is also super cooled liquid. Why?
(ii) Cleavage of crystal is itself anisotropic behaviour. Justify it.
(iii) Water and ethanol can mix easily in all proportions. Give reason.
(iv) In a cold winter the fish in garden ponds owe their lives to H-bonding. Explain.
(v) Define Hunds rule with an example.
(vi) Give out two defects of Rutherford Model of an atom.
(vii) Differentiate between Zeeman and Stark effect.
(viii) Define continuous spectrum with an example.
(ix) Why some of properties are called colligative?
(x) What are the conditions to obey colligative properties?
(xi) Define half life time (period) with an example.
(xii) How the surface area affect the rate of reaction?

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

(i) Why atomic radius cannot be determined precisely?
(ii) How ionization energy changes in periodic table?
(iii) What is coordinate covalent bond? Give one example.
(iv) Why bond order of Helium molecule is zero?
(v) Why enthalpy of neutralization is called enthalpy of formation of H_2O?
(vi) Define heat capacity of a body. Give its mathematical expressions.
(vii) What is enthalpy of reaction? Give example.
(viii) What is oxidation number? Give example.
(ix) Write the product obtained during electrolysis of $PbBr_2$.

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

(a) Describe combustion analysis. Also write formula to calculate percentage of carbon, hydrogen and oxygen.
(b) State Mosley's law. What is its importance? 02,02 01,03

(a) $250cm^3$ of hydrogen gas is cooled from 127°C to –27°C keeping the pressure constant. Calculate the new volume of the gas at low temperature.
(b) Explain the construction and working of fuel cells. 04 04

(a) Give the assumptions and postulates of VSEPR theory.
(b) Define and explain Hess's law of constant heat summation with an example. 1,3 1,3

(a) Write the structure of ice. Why ice floats on water?
(b) The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25°C. Calculate the solubility of the compound. 3,1 1,1,1

(a) How lowering of vapour pressure as colligative property is used to find out molecular mass of solute? 04
(b) Explain any four characteristics of a catalyst. 04

Objective
Paper Code
6486

Intermediate Part First

CHEMISTRY (Objective) GROUP - II

Time: 20 Minutes Marks: 17

Roll No. : _____

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 circle. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given objective type question paper and leave other circles blank. FBD-G2-22

S.#	Questions	A	B	C	D
1	Ionic solids are characterized by:	Low melting point	Good conductors in solid state	High vapour pressure	Solubility i polar solvents
2	London dispersion forces are present among the:	Molecules of liquid water	Molecule of hydrogen chloride gas	Molecule of solid iodine	All these
3	Value of R at STP:	8.21 dm^3 atm k^{-1} mol^{-1}	0.0821 dm^3 atm k^{-1} mol^{-1}	0.00821 dm^3 atm k^{-1} mol^{-1}	0.000821 dn atm k^{-1} mol
4	Gases deviate from ideal behaviour at high pressure because:	At high pressure, the gas molecule move in one direction only	At high pressure, the gas molecules move in all direction	At high pressure, there are significant attractive forces	All these
5	Coloured impurities appear during crystallization are removed by boiling the substance in the solvent with:	Silica gel	Benzoic acid	Powdered animal charcoal	$CaC\ell_2$
6	A technique in which a solute distribute itself in stationary phase and mobile phase is called:	Sublimation	Solvent extraction	Chromato-graphy	None of these
7	Many elements have fractional atomic masses. This is because:	Mass of the atom is itself fractional	Atomic mass are average masses of isobars	Atomic masses are average masses of isotopes	Atomic masse are average masses of isotopes proportional t their relative abundance
8	The volume occupied by 1.4g of N_2 at S.T.P. is:	2.24 dm^3	22.4 dm^3	1.12 dm^3	112 cm^3
9	The catalytic activity of enzyme is greatly enhanced by the presence of:	Inhibitors	Coenzymes	Activators	Coenzymes & activators
10	Oxidation number of 'Mn' in $KMnO_4$ is:	3	5	7	9
11	18gram glucose is dissolved in 90gram of water. The relative lowering of vapour pressure equal to:	$\frac{1}{5}$	5.1	$\frac{1}{51}$	6
12	pH of 10^{-4} mol dm^{-3} of $HC\ell$ is:	1	2	3	4
13	For the reaction $NaOH + HC\ell \rightarrow NaC\ell + H_2O$ the change in enthalpy is:	Heat of reaction	Heat of formation	Heat of neutralization	Heat of combustion
14	Bond order for He_2 is:	0	1	2	3
15	Ethyne molecule have:	Three π bonds between carbon atom	Three σ bonds between carbon atom	One σ and two π bonds between carbon atom	One π and two σ bonds between carbon atom
16	Quantum number value for 2p orbitals are:	$n=2$, $\ell=1$	$n=1$, $\ell=2$	$n=1$, $\ell=0$	$n=2$, $\ell=0$
17	In the ground state of an atom, the electron is present:	In the nucleus	In the second shell	Nearest to the nucleus	Farthest from the nucleus

Intermediate Part First Roll No. _____

CHEMISTRY (Subjective) GROUP - II

Time: 02:40 Hours Marks: 68 FBDG2-22

SECTION – I

2. **Write short answers of any EIGHT parts.** 16
   (i) Define isotopes. Write isotopes of carbon.
   (ii) Mg atom is twice heavier than carbon atom. Justify.
   (iii) What is macro molecule? Give example.
   (iv) Define partition chromatography with example.
   (v) State distribution law.
   (vi) How fluted filter paper is prepared?
   (vii) State Charle's law. Write its mathematical form.
   (viii) Define critical temperature and critical pressure of a substance.
   (ix) Differentiate between natural and artificial plasma.
   (x) Differentiate between reversible and irreversible reactions.
   (xi) Define Buffer capacity.
   (xii) What is the effect of common ion on solubility?

3. **Write short answers of any EIGHT parts.** 16
   (i) Why is boiling point of H_2O greater than that of HF?
   (ii) What are London forces? Give an example.
   (iii) Define lattice energy. Give one example.
   (iv) What are molecular solids? What type of interactions hold them together?
   (v) Define spectrum. Give its two types.
   (vi) The e/m values of positive rays for different gases are different but those for cathode rays, the e/m values are same. Why?
   (vii) How are the neutrons involved in the conversion of $^{65}_{29}Cu$ into $^{66}_{30}Zn$?
   (viii) What are x-rays? How are they produced?
   (ix) Aqueous solution of $CuSO_4$ is acidic in nature. Give the reason.
   (x) Why are $NaC\ell$ and KNO_3 used to lower the melting point of ice?
   (xi) What are Pseudo first order reactions? Give one example.
   (xii) How does the surface area of reactants affect the rate of reaction? Give an example.

4. **Write short answers of any SIX parts.** 12
   (i) How does the electronegativity difference decide the nature of ionic bond?
   (ii) Why an ionic bond is stronger than covalent bond?
   (iii) Why the atomic radii increase down the group?
   (iv) How the bond length is affected by hybridization?
   (v) What is state and state function?
   (vi) What do you mean by internal energy of chemical system?
   (vii) Define surroundings and give examples.
   (viii) Write the cathodic reaction in fuel cells.
   (ix) Give the structure of anode and cathode in lead acid battery.

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

5. (a) Write various steps to calculate the empirical formula of a compound. 1,1,1,1
   (b) What is Plank's Quantum Theory? Write its main points. 1,1,1,1

6. (a) $250cm^3$ of the sample of hydrogen effuses four times as rapidly as $250cm^3$ of an unknown gas. Calculate the molar mass of unknown gas. 04
   (b) Describe fuel cells. Give their uses. 02,02

7. (a) Write postulates of M.O.T. and explain oxygen molecule by this theory. 04
   (b) Explain first law of thermodynamics. 04

8. (a) What are liquid crystals? Give their uses. 04
   (b) The solubility of CaF_2 in water at 25°C is found to be 2.05×10^{-4} mol dm^{-3}. What is the value of K_{sp} at this temperature? 04

9. (a) Give applications of elevation of boiling point and depression of freezing point. 04
   (b) Explain rate determining step in detail. 04