Student Roll Number P-357 Sample Roll Number 025609

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BN-XIXVII-I

CHEMISTRY (PART-I)

SECTION –A

Time : **20 Minute**

Marks : **18**

Sign of Supdt:

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Q.No.1: You have four choices for each objective type question as Ⓐ, Ⓑ, Ⓒ and Ⓓ. The choice which you think is correct fill that circle in front of the 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.

i. The molar mass of HNO_3 is;
Ⓐ 25 gm Ⓑ 63 gm Ⓒ 68 gm Ⓓ 630 gm — Ⓐ Ⓑ Ⓒ Ⓓ

ii. The sum of %age composition of each component in any sample is equal to;
Ⓐ Zero Ⓑ 1 Ⓒ 50 Ⓓ 100 — Ⓐ Ⓑ Ⓒ Ⓓ

iii. Neutron was discovered by;
Ⓐ Chadwick Ⓑ Millikan Ⓒ Einstein Ⓓ Newton — ● Ⓑ Ⓒ Ⓓ

iv. The bond order of N_2 molecule is;
Ⓐ 0 Ⓑ 2 Ⓒ 3 Ⓓ 4 — Ⓐ Ⓑ Ⓒ Ⓓ

v. The amount of heat required to break 1 mole of H_2 bond into its individual atom is;
Ⓐ 425 KJ Ⓑ 430 KJ Ⓒ 436 KJ Ⓓ 438 KJ — Ⓐ Ⓑ Ⓒ Ⓓ

vi. The lattice energy of ionic compound is;
Ⓐ Low Ⓑ High Ⓒ Zero Ⓓ Variable — Ⓐ Ⓑ Ⓒ Ⓓ

vii. At the same temperature and pressure which of the following gases has the greatest density?
Ⓐ CO_2 Ⓑ SO_2 Ⓒ Cl_2 Ⓓ H_2O — Ⓐ Ⓑ Ⓒ Ⓓ

viii. The coordination number of each ion in NaCl crystal is;
Ⓐ 1 Ⓑ 4 Ⓒ 6 Ⓓ 8 — Ⓐ Ⓑ Ⓒ Ⓓ

ix. The cohesive forces between the water molecule are due to;
Ⓐ Ionic bonding Ⓑ Covalent bonding Ⓒ Hydrogen bonding Ⓓ London dispersion forces — Ⓐ Ⓑ ● Ⓓ

x. Kp is equal to Kn when difference of moles of product to the reactant is;
Ⓐ Positive Ⓑ Negative Ⓒ Zero Ⓓ 1 — Ⓐ Ⓑ Ⓒ Ⓓ

xi. How much reaction is completed when Ke = 1?
Ⓐ 10% Ⓑ 25% Ⓒ 50% Ⓓ 100% — Ⓐ Ⓑ Ⓒ Ⓓ

xii. Very large value of Ka means that the solution is a ;
Ⓐ Strong acid Ⓑ Weak acid Ⓒ Weak base Ⓓ Strong base — Ⓐ Ⓑ Ⓒ Ⓓ

xiii. For a reaction A→ product, doubling the concentration of A, quadruples the rate. The reaction is;
Ⓐ First order Ⓑ 2nd order Ⓒ 3rd order Ⓓ Zero order — Ⓐ Ⓑ Ⓒ Ⓓ

xiv. Reversible solution in which there is attraction between dispersed phase and solvent is;
Ⓐ Hygroscopic Ⓑ Hydrophobic Ⓒ Lyophobic Ⓓ Lyophillic — Ⓐ Ⓑ Ⓒ Ⓓ

xv. Sum of potential and kinetic energy of a chemical reaction is;
Ⓐ Internal energy Ⓑ Enthalpy Ⓒ Activation energy Ⓓ Vibrational energy — Ⓐ Ⓑ Ⓒ Ⓓ

xvi. Heat capacity depend upon;
Ⓐ Pressure Ⓑ Volume Ⓒ Composition Ⓓ Mass — Ⓐ Ⓑ Ⓒ Ⓓ

xvii. Which of the following is reduction reaction?
Ⓐ $Br_2 \rightarrow 2Br^-$ Ⓑ $Fe^{+2} \rightarrow Fe^{+3}$ Ⓒ $Zn \rightarrow Zn^{+2}$ Ⓓ $Sn^{+2} \rightarrow Sn^{+4}$ — Ⓐ Ⓑ Ⓒ Ⓓ

xviii. Which of the following is strong electrolyte?
Ⓐ Ammonium hydroxide Ⓑ Carbonic acid Ⓒ Potassium iodide Ⓓ Acetic acid — Ⓐ Ⓑ Ⓒ Ⓓ

BN-XIXVII-I

Time allowed: 2:40 Hrs **CHEMISTRY (PART-I)** *Marks : 67*

SECTION- B & C

Note: Attempt section B & C accordingly.

SECTION –B

Marks: 40

Q.No 2. ***Attempt any (TEN) parts of the following. All parts carry equal marks.***

i. Why balance chemical equations are used in stoichiometric problem?

ii. Calculate the radius of 3rd and 4th orbits of hydrogen atom.

iii. Distribute electrons in orbitals of $_{20}Ca$, $_{29}Cu$, $_{53}I$, $_{24}Cr$.

iv. Write note on Hunds Rules.

v. Explain the structure of Acetylene on the basis of hybridization.

vi. Rapid expansion of gases causes cooling. Explain.

vii. Earthenware vessels keep water cool even in hot summer days. Give reasons.

viii. Write a brief note on the unit cell.

ix. Explain with reason as why amorphous solids are also termed as "Super Cooled" liquid?

x. What are acids? Discuss leveling effect of acids with examples.

xi. NH_3 is a base according to Lewis concept, comments.

xii. What is state function? Give its characteristics.

xiii. Describe shortly that lead storage battery is rechargeable.

SECTION –C

Marks: 27

Note: ***Attempt any (THREE) of the following. All questions carry equal marks.***

Q.No:3 a). What are quantum numbers? Discuss their significance in detail.

b). How many moles are present in each of the following samples;
(i) 30 gm of MgS (ii) 70 gm of Ca (iii) 22 gm of CO_2

Q.No:4 a). Explain valence bond theory.

b). State Graham's law of diffusion. Also prove its mathematical expression by an experiment.

Q.No:5 a). Mention the properties of ionic crystals.

b). State the law of mass action and the equilibrium expression for the equation $A + B \rightleftharpoons C + D$.

Q.No:6. a). What are Enthalpy changes? Discuss measurement of enthalpy change.

b). Discuss Secondary Battery.