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COMMON FIRST REVISION EXAMINATION - 2024

Std - XI

Time : 3.00 Hours

CHEMISTRY

Marks: 70

Part - I

I. Answer all the questions:

15 x 1 = 15

- The equivalent mass of a trivalent metal element is 9g eq⁻¹ the molar mass of its anhydrous oxide is
a) 102g b) 27g c) 270g d) 78g
- Splitting of spectral lines in an electric field is called
a) Zeeman effect b) Shielding effect c) Compton effect d) Stark effect
- Which one of the following is used as a standard for atomic mass.
a) ${}^6\text{C}^{12}$ b) ${}^7\text{C}^{12}$ c) ${}^6\text{C}^{13}$ d) ${}^6\text{C}^{14}$
- Which of the following does not represent the mathematical expression for the Heisenberg uncertainty principle?
a) $\Delta x \cdot \Delta p \geq h/4\pi$ b) $\Delta x \cdot \Delta v \geq h/4\pi m$ c) $\Delta x \cdot \Delta t \geq h/4\pi$ d) $\Delta E \cdot \Delta x \geq h/4\pi$
- Which of the following elements will have the highest electronegativity?
a) Chlorine b) Nitrogen c) Cesium d) Fluorine
- In a given shell the order of screening effect is
a) $s > p > d > f$ b) $s > p > f > d$ c) $f > d > p > s$ d) $f > p > s > d$
- Water gas is
a) $\text{H}_2\text{O}_{(g)}$ b) $\text{CO} + \text{H}_2\text{O}$ c) $\text{CO} + \text{H}_2$ d) $\text{CO} + \text{N}_2$
- Volume strength of 1.5 NH_2O_2 is
a) 1.5 b) 4.5 c) 16.8 d) 8.4
- Sodium is stored in
a) alcohol b) water c) kerosene d) none of these
- The suspension of slaked lime in water is known as
a) lime water b) quick lime c) milk of lime d) aqueous solution of slaked lime
- Use of hot air balloon in sports at meteorological observation is an application of
a) Boyle's law b) Newton's law c) Kelvin's law d) Brown's law
- In an adiabatic process, which of the following is true?
a) $q = w$ b) $q = 0$ c) $\Delta E = q$ d) $P \Delta V = 0$
- Solubility of carbon dioxide gas in cold water can be increased by
a) increase in pressure b) decrease in pressure
c) increase in volume d) none of these
- Normality of 1.25M sulphuric acid is
a) 1.25N b) 3.75N c) 2.5N d) 2.25N
- Which of the following is electron deficient?
a) PH_3 b) $(\text{CH}_3)_2$ c) BH_3 d) NH_3

Part - II

II. Answer any six Questions. Question No. 24 is compulsory.

6 x 2 = 12

- Calculate the equivalent mass of H_2SO_4

17. State Modern Periodic Law,
18. What are the uses of Heavy water?
19. State Dalton Law of partial pressures.
20. State Zeroth Law of Thermodynamics.
21. Define reaction quotient (Q).
22. State term 'Isotonic solution.
23. Give the general formula for the following class of organic compounds.
a) Alkenes b) Alkynes
24. Mention the shape of the following molecules based on VSEPR theory
i) PCl_5 ii) SF_6

Part - III

- III. Answer any six questions. Question No. 33 is compulsory. 6 x 3 = 18**
25. Derive the de-Broglie equation.
 26. Explain why the electron affinity of Be and N is almost zero.
 27. Mention the three types of covalent hydrides.
 28. Discuss the similarities between Beryllium and Aluminium.
 29. Distinguish between extensive and intensive property.
 30. How will you determine the molar mass of a solute from osmotic pressure?
 31. Explain the salient features of Molecular Orbital theory (Any Three Points).
 32. Explain about Inductive effect.
 33. Write K_p and K_c for the reaction $2\text{CO}_{(g)} \rightleftharpoons \text{CO}_{2(g)} + \text{C}_{(s)}$

Part - IV

- IV. Answer the following questions. 5 x 5 = 25**
34. a) i) Distinguish between oxidation and reduction. (3)
ii) What is Exchange energy? (2) (OR)
 - b) Derive Ionic radius using Pauling's method.
 35. a) i) How do you convert para hydrogen into orthohydrogen? (3)
ii) What are the reasons for the anomalous properties of Beryllium? (2) (OR)
 - b) Derive the values of Critical Constants in terms of Vander Waals constants.
 36. a) i) Give any three characteristics of Gibbs free energy. (3)
ii) Define-Le-Chatelier principle. (2) (OR)
 - b) i) What are limitation of Henry's Law? (3)
ii) Define Bond order. (2)
 37. a) Discuss the formation of O_2 molecule using MO theory. (OR)
 - b) i) What happens when acetylene undergoes Ozonolysis ? (2)
ii) Write short notes on the the following i) Raschig process ii) Darzens process (3)
 38. a) i) What is Van't Hoff factor 'i'? (2)
ii) What are State and Path Functions? Give two examples. (3) (OR)
 - b) i) Differentiate - BOD and COD (3)
ii) Write short notes on Swarts reaction. (2)
