

Important Questions 2010 Class-XII (Chemistry)

- Q. 1.** Why enthalpy of chemisorptions higher than that of physisorptions?
- Q. 2.** The values of dissociation constant A and B are 1×10^{-12} & 6.2×10^{-6} . Which complex will be more stable and why?
- Q. 3.** Why it is difficult to prepare pure amines by ammonolysis of alkyl halide?
- Q. 4.** Draw the structure of p-nitro-toluene.
- Q. 5.** Name a preservative used in cold drinks.
- Q. 6.** Why aniline forms meta-nitro-aniline on nitration?
- Q. 7.** Why are vitamin A & C essential for us?
- Q. 8.** Benzyl chloride is 1° halide but still follows SN1 mechanism. Why?
- Q. 9.** Explain Schottky defect?
- Q. 10.** An element with molar mass 2.7×10^{-2} kg/mol forms a cubic cell with edge length 405 pm. If its density is 2.7×10^3 kg/m³, what is the nature of cubic unit cell?
- Q. 11.** Determine the amount of CaCl₂ (73.5%) dissolved in 2.5 L of water such that its osmotic pressure is 7.5 atm at 27°C.
- Q. 12.** Predict the products of electrolysis in each of the following→
i) An aqueous solution of AgNO₃ with Ag electrode.
ii) A dilute solution of H₂SO₄ using Pt electrode.
- Q. 13.** Discuss the shape and magnetic behavior of Fe(CO)₅. (Fe=26)
- Q. 14.** Complete the following reactions→
i. $P_4O_{10} + H_2O \rightarrow ?$
ii. $P_4 + KOH + H_2O \rightarrow ?$
iii. $Cu + H_2SO_4(c) \rightarrow ?$
iv. $SF_4 + H_2O \rightarrow ?$
- Q. 15.** Propose the mechanism for the following reaction→
 $CH_3CHO + HCN + H^+ \rightarrow CH_3-CH(OH)-CN.$
- Q. 16.** Write short notes on→
i. Wurtz reaction.
ii. Sandmeyer's reaction.
- Q. 17.** Differentiate between the following→
i. Thermoplastics and thermosetting polymers.
ii. Elastomers and Fibres.

Q. 18. Write the names of monomers→

- i. Buna-S
- ii. Terylene
- iii. Nylon-6
- iv. Buna-N

Q. 19. A solution contains 30g of non-volatile solute exactly in 90g of water has a v.p of 2.8KPa at 298K. The v.p becomes 2.9 KPa when 18g of more water is added to it. Calculate→

- i. Molar mass of solute
- ii. v.p of water at 298K

Q. 20.

- i. State Faraday's second law.
- ii. Write the Nernst equation and calculate emf of the cell→
 $\text{Fe(s)}/\text{Fe}^{2+}(0.001 \text{ M})//\text{H}^{+}(1 \text{ M})/\text{H}_2(\text{g})(1 \text{ bar})/\text{Pt(s)}$. $E^{\text{Fe}^{2+}/\text{Fe}} = -0.44\text{V}$. $1+2= (3)$

Q. 21. Give reasons for the following→

- i. Enzyme catalysts are highly specific in their action.
- ii. The path of light becomes visible when it is passed through As_2O_3 sol.

Q. 22. Name one ore of copper. How is it concentrated? Write all the chemical reactions involved in its extraction.

Q. 23. Explain giving reasons→

- i. Transition metals show paramagnetic behavior.
- ii. Enthalpy of atomization of Zn is lowest in its series.
- iii. $E^{\text{Cu}^{2+}/\text{Cu}}$ = positive.

Q. 24.

- i. Why does CH_3COOH undergo HVZ reaction?
- ii. Why formic acid stronger than acetic acid?

Q. 25. Arrange the following in order of property indicated→

- i. F, Cl, Br, I→ increasing electron affinity
- ii. HCl, HBr, HF, HI→ increasing acid strength
- iii. NH_3 , PH_3 , AsH_3 , SBH_3 , BiH_3 → increasing basicity.

Q. 26.

- i. Why aryl halides less reactive than alkyl halides towards nucleophilic substitution reaction.
- ii. In spite of electron withdrawing nature of halogens, still they are o- and p- directing towards electrophilic substitution reaction. Why?

Q. 27.

- i. What are anomers? How many anomers of glucose are known? Name them.
- ii. What are essential amino acids? Give one example.

Q. 28.

- i. the rate constants of a reaction at 500K and 700K are 0.02s^{-1} and 0.08s^{-1} . Calculate the value of A and E_a .
- ii.
 - a. Identify the order of reaction in plot.
 - b. What is unit of rate constant?
 - c. What is slope equal to?
 - d. What is intercept equal to?

Q. 29.

- i. Why SF_6 not hydrolyzed but SF_4 can be?
- ii. Arrange the following based on oxidizing power $\rightarrow \text{HOCIO}_2, \text{HOCl}, \text{HOCIO}, \text{HOCIO}_3$.
- iii. Draw the structure of the following oxo-acids $\rightarrow \text{H}_2\text{SO}_5, \text{H}_2\text{S}_2\text{O}_8$.

Q. 30.

- i. The hydrocarbon A adds one mole of H_2 in presence of Pt catalyst to form n-hexane. When A is oxidized with KMnO_4 , A single carboxylic acid B formed. B when heated with Ca(OH)_2 to form calcium salt which on distillation give C. C reacts with HCN to give D. D on hydrolysis in presence of acid form E. Identify A,B,C,D,E and write the reactions involved.
- ii. An organic compound A contains C, H, O and Cl. It reduces Fehling's solution and on oxidation gives a monocarboxylic acid B. B on treatment with soda lime gives a sweet smelling liquid C, which can also be obtained by heating A with alkali. A can also be obtained by the action of Cl_2 with ethyl alcohol, Deduce the structure A, B, C with reactions involved.