



	THE JAIN INTERNATIONAL SCHOOL, BILASPUR				
	A JGI Institution				
PRE BOARD 1 EXAMINATION (2014-15)					
CLASS :	XII	SUBJECT :	CHEMISTRY	TIME :	3 Hours

General Instructions:

- (i) All questions are compulsory.
- (ii) Marks for each question are indicated against it.
- (iii) Question numbers **1 to 5** are very short-answer questions and carry **1** mark each.
- (iv) Question numbers **6 to 10** are short-answer questions and carry **2** marks each.
- (v) Question numbers **11 to 22** are also short-answer questions and carry **3** marks each.
- (vi) Question number **24** is value based question and carries **4** mark.
- (vii) Question numbers **24 to 26** are long-answer questions and carry **5** marks each.
- (viii) Use Log Tables, if necessary, Use of calculators is **not** allowed.

1. What type of Semiconductor is obtained when Silicon is doped with Arsenic ? [1]
2. o-nitrophenol has lower boiling point than p-nitrophenol. Why ? [1]
3. Write the structure of 4-Methylpent-3-en-2-one. [1]
4. Write the Carbylamine reaction. [1]
5. Name the only vitamin which can be synthesized in our body. Name one disease caused due to the deficiency of this vitamin. [1]
6. Describe the Leclanche cell **OR** Lead storage battery with diagram. [2]
7. A first order reaction is found to have a rate constant $k = 0.0005 \text{ min}^{-1}$. Find the half life of the reaction. [2]
8. Complete the following equations : [2]
i) $2 \text{CrO}_4^{2-} + 2 \text{H}^+ \text{-----} \rightarrow$

- (iii) The enthalpy of atomization of transition metals are high.
17. .i) Give the IUPAC name of $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$. [1+2]
 ii) Explain why $[\text{Cr}(\text{NH}_3)_6]^{3+}$ is paramagnetic while $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic.
- 18.a).Bring about the following conversions : [2+1]
 i) Propanone to 2-Methylpropan-2-ol
 ii) Phenol to Salicylaldehyde
 b) Give the mechanism of hydration of propene.
19. Write the main products of the following reactions : [3]
 a) $\text{C}_6\text{H}_5\text{N}_2\text{Cl} + \text{CH}_3\text{COCl} \xrightarrow{\text{Base}}$
 b) $\text{C}_6\text{H}_5\text{NH}_2 + \text{Br}_2(\text{aq.}) \rightarrow$
 c) Coupling reaction.
20. a) Name the bases which are common to both DNA and RNA.
 b) Deficiency of which vitamin causes 'Beri beri' ? What are its symptoms ?
 c) Give one reaction to show that glucose has five hydroxy groups.
21. a) Give the reaction for the formation of the following polymers: [3]
 i) Teflon
 ii) Nylon -6,6
 b) Give two points of difference between Thermoplastic and Thermosetting polymer.
22. Write short notes on (**any three**) : [3]
 i) Artificial sweetening agents
 ii) Antibiotics
 iii) Analgesics
 iv) Synthetic detergents
- *23. Kavita, a housewife got a cut on her finger while working in the kitchen which started bleeding and she became panicky. She immediately called her neighbour (a chemistry student) who applied ferric chloride on the cut and the bleeding stopped. Answer the following questions : [4]
 i) Why did the bleeding stop on applying Ferric chloride ?
 ii) What is the name of the phenomenon involved ? Define it.
 iii) Give the reasons for existence of positive or negative charge on sol particles.

iv) What is the value associated with this episode from safety point of view ?

24.a) Calculate the mass of organic compound (Molar mass 256 g mol^{-1}) to be dissolved in 75 g of benzene to lower its freezing point by 0.48 K ($K_f = 5.12 \text{ K Kg mol}^{-1}$) [2+3]

b) Define the following terms :

- i) Ideal Solution
- ii) Azeotrope
- iii) Osmotic pressure

OR

a) 18 g of glucose is dissolved in 1 kg of water in a saucepan. At what temperature will water boil at 1.013 bar? K_b for water is $0.52 \text{ K kg mol}^{-1}$.

b) State Raoult's law for solution of volatile liquid components. Taking a suitable example explain the meaning of positive and negative deviation from Raoult's law.

25. a) Draw the structures of the following : [2+3]

- i) XeF_6
- ii) HClO_4

b) Give reasons for the following :

- i) Oxygen is a gas but sulphur is a solid.
- ii) BiH_3 is the strongest reducing agent amongst all the hydrides of group 15 elements.
- iii) PH_3 has lower boiling point than NH_3 .

OR

a) Complete the following equations :

- i) $\text{Cu} + \text{HNO}_3(\text{conc.}) \rightarrow$
- ii) $\text{XeF}_4 + \text{H}_2\text{O} \rightarrow$

b) Answer the following :

- i) Why are halogens coloured ?

- ii) Why does PCl_3 fume in moisture ?
- iii) Why is N_2 less reactive at room temperature ?

26. (a) Illustrate the following name reactions: [2+3]

- (i) Aldol condensation.
 - (ii) Hell Volhard Zelinsky reaction.
- (b) How would you obtain the following:
- (i) Benzaldehyde from Benzene.
 - (ii) Propene from Propanone.
 - (iii) Benzoic acid from Ethylbenzene.

OR

- (a) Give chemical tests to distinguish between the following:
- (i) Benzoic acid and Phenol.
 - (ii) Benzophenone and Acetophenone
- (b) Complete each synthesis by giving missing reagents or products in the following:


