

JGI	TH	E JAIN I	NTERNA	TIONAL	SCHOOL, I	BILASPUR			
	A JGI Institution								
PRE BOARD 1 EXAMINATION (2014-15)									
C	LASS :	XII	SUBJECT :	CHEMISTRY		TIME :	B Hours		
<ul> <li>General Instructions:</li> <li>(i) All questions are compulsory.</li> <li>(ii) Marks for each question are indicated against it.</li> <li>(iii) Question numbers 1 to 5 are very short-answer questions and carry 1 mark each.</li> <li>(iv) Question numbers 6 to 10 are short-answer questions and carry 2 marks each.</li> <li>(v) Question numbers 11 to 22 are also short-answer questions and carry 3 marks each.</li> <li>(vi) Question number 24 is value based question and carries 4 mark.</li> <li>(vii) Question numbers 24 to 26 are long-answer questions and carry 5 marks each.</li> <li>(viii) Use Log Tables, if necessary, Use of calculators is not allowed.</li> </ul>									
1. W	hat ty	pe of Semicor	nductor is obtai	ned when Silic	on is doped with	Arsenic ?	[1]		
2. o-	2. o-nitrophenol has lower boiling point than p-nitrophenol.Why?						[1]		
3. W	rite th	e structure of	4-Methylpent	-3-en-2-one.			[1]		
4.Wr	rite the	e Carbylamine	e reaction.				[1]		
5. Na	ame th	e only vitami	n which can be	synthesized in	our body.Name	one disease cause	ed [1]		
du	ie to tł	ne deficiency of	of this vitamin.						
6. De	escribe	the Leclanch	e cell <b>OR</b> Lead	storage batter	y with diagram.		[2]		
7.A f	irst or	der reaction is	s found to have	e a rate consta	nt k = 0.0005 min	<sup>-1</sup> .Find the	[2]		
hal	lf life o	f the reaction	ı.						
		e the followir $2^{2^{-}}$ + 2 H <sup>+</sup>	ng equations : →				[2]		

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ii) KMnO<sub>4</sub> ----- Heat------ $\rightarrow$ 

<ul> <li>9.i) Which alkyl halide from the following pair would you expect to react rapidly by an S<sub>N</sub>2 mechanism ? Explain your answer. CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>Br or CH<sub>3</sub>CH<sub>2</sub>CH(Br)CH<sub>3</sub></li> <li>ii) In the given pair of halogen compounds, which one undergoes faster S<sub>N</sub>1 reaction : (CH<sub>3</sub>)<sub>3</sub>C-Cl or CH<sub>3</sub>CH<sub>2</sub>CH(Cl)CH<sub>2</sub>CH<sub>3</sub></li> </ul>						
10. Write the given name reactions :i)Fittig reactionii) Swarts reaction.	[2]					
<ul> <li>11i) An element has molar mass 27 g mol<sup>-1</sup> forms a cubic unit cell with edge length 4.05 x 10<sup>-8</sup> cm.If its density is 2.7 g cm<sup>-3</sup>, what is the nature of the cubic unit cell ?</li> <li>ii) What type of defect can arise when a solid is heated ?Which physical property is affected by it and in what way ?</li> </ul>						
12. Calculate the emf of the cell and $\Delta$ G in which the reaction is : Calculate the emf of the given cell at 25°C : Cu(s) + 2 Ag <sup>+</sup> (1.0 x 10 <sup>-4</sup> M) $\rightarrow$ Cu <sup>2+</sup> (0.130M) + 2Ag(s) E <sup>o</sup> values at 25°C : Cu <sup>2+</sup> /Cu = 0.34 V, Ag <sup>+</sup> /Ag = 0.80 V	[3]					
13. List the main points of difference between Order and molecularity of a reaction.	[3]					
<ul> <li>14. Describe the principle behind each of the following processes:</li> <li>a) Vapour phase refining of Titanium metal.</li> <li>b) Zone refining</li> <li>c) Liquation.</li> </ul>	[3]					
15. A translucent white waxy solid "A" reacts with concentrated NaOH in an inert atmosphere to give a poisonous gas "B" with fishy odour. This gas "B" reacts with Mercuric chloride to give the corresponding phosphide "C". Identify A, B and C and write all the reactions involved.	[3]					
<ul> <li>16. How would you account for the following:</li> <li>(i) Cr<sup>2+</sup> is reducing in nature while with the same d-orbital configuration (d4) Mn<sup>3+</sup> is an oxidising agent.</li> <li>(ii) Zn,Cd &amp; Hg are not regarded as Transition elements.</li> </ul>						

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<ul> <li>17i) Give the IUPAC name of [Co(NH<sub>3</sub>)<sub>4</sub>Cl<sub>2]</sub>Cl.</li> <li>ii) Explain why [Cr(NH<sub>3</sub>)<sub>6</sub>]<sup>3+</sup> is paramagnetic while [Ni(CN)<sub>4</sub>]<sup>2-</sup> is diamagnetic.</li> </ul>	[1+2]
<ul> <li>18.a).Bring about the following conversions :</li> <li>i) Propanone to 2-Methylpropan-2-ol</li> <li>ii) Phenol to Salicyaldehyde</li> <li>b) Give the mechanism of hydration of propene.</li> </ul>	[2+1]
<ul> <li>19.Write the main products of the following reactions :</li> <li>a) C<sub>6</sub>H<sub>5</sub>N<sub>2</sub>Cl + CH<sub>3</sub>COClBase→</li> <li>b) C<sub>6</sub>H<sub>5</sub>NH<sub>2</sub> + Br<sub>2</sub> (aq.)→</li> <li>c) Coupling reaction.</li> </ul>	[3]
<ul><li>20. a) Name the bases which are common to both DNA and RNA.</li><li>b) Deficiency of which vitamin causes 'Beri beri'? What are its symptoms ?</li><li>c) Give one reaction to show that glucose has five hydroxy groups.</li></ul>	
<ul> <li>21. a) Give the reaction for the formation of the following polymers:</li> <li>i) Teflon</li> <li>ii) Nylon -6,6</li> <li>b) Give two points of difference between Thermoplastic and Thermosetting polymer.</li> </ul>	[3]
22. Write short notes on (any three) :	[3]
<ul> <li>i) Artificial sweetening agents</li> <li>ii) Antibiotics</li> <li>iii) Analgesics</li> <li>viv) Synthetic detergents</li> </ul>	
<ul> <li>*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 : <ul> <li>i) Why did the bleeding stop on applying Ferric chloride ?</li> <li>ii) What is the name of the phenomenon involved ? Define it.</li> <li>iii) Give the reasons for existence of positive or negative charge on sol particles.</li> </ul> </li> </ul>	[4]

(iii) The enthalpy of atomization of transition metals are high.

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- 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<sup>-1</sup>) to be dissolved [2+3] in 75 g of benzene to lower its freezing point by 0.48 K ( $K_f = 5.12$  K Kg mol<sup>-1</sup>)
  - 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? Kb for water is 0.52 K kg mol<sup>-1</sup>.

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 :
  - i) XeF<sub>6</sub> ii) HClO<sub>4</sub>
  - 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) Cu + HNO₃(conc.) -----→
- b) Answer the following :
  - i) Why are halogens coloured ?

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### [2+3]

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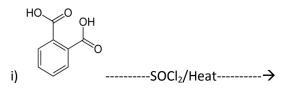
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ii)Why does  $PCI_3$  fume in moisture ? iii)Why is  $N_2$  less reactive at room temperature ?

- 26. (a) Illustrate the following name reactions:
  - (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:



- ii) HCHO + KOH(conc.) -----→
- iii) CH<sub>3</sub>COOH + NH<sub>3</sub> -----→

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[2+3]

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