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# CBSE 12th Chemistry 2011 Unsolved Paper Delhi Board

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# CBSE 12th Physics 2011 Unsolved Paper Delhi Board

TIME - 3HR. | QUESTIONS - 30

THE MARKS ARE MENTIONED ON EACH QUESTION

## SECTION – A

**Q.1. ‘Crystalline solids are anisotropic in nature.’ What does this statement mean? 1 mark**

**Q.2. Express the relation between conductivity and molar conductivity of a solution held in a cell. 1 mark**

**Q.3. What flows in the internal circuit of a galvanic cell? 1 mark**

**Q.4. What is the structure of  $XeF_2$  molecule, Draw it?**

**Q.5. Write the IUPAC name of the following compound: 1 mark**  
 $(CH_3)_3CCH_2Br$

**Q.6. Draw the structure of 3-methyl butanol.**

**Q.7. Arrange the following compounds in an increasing order of their solubility in water:**  
 $C_6H_5NH_2, (C_2H_5)_2NH, C_2H_5NH_2$  1 mark

**Q.8. Define biodegradable polymers? 1 mark**

## SECTION – B

**Q.9. The chemistry of corrosion of iron is essentially an electrochemical phenomenon. Explain the reactions occurring during the corrosion of iron in the atmosphere? 2 marks**

**Q.10. Determine the values of the equilibrium constant ( $K_C$ ) and  $\Delta G^\circ$  for the following reaction: 2 marks**



**Q.11. Distinguish between ‘rate expression’ and ‘rate constant’ of a reaction. 2 marks**

**Q.12. Give reason for: 2 mark**

(i)  $SF_6$  is kinetically an inert substance.

(ii) The  $N - O$  bond in  $NO_2^-$  is shorter than the  $N - O$  bond in  $NO_3^-$ .

Or

State reasons for each of the following:

- (i) All the  $P - Cl$  bonds in  $PCl_5$  molecule are not equivalent.
- (ii) Sulphur has greater tendency for catenation than oxygen.

Q.13. Assign reasons for the following:

- (i) Copper (I) ion is not known in aqueous solution.
- (ii) Actaeonids exhibit greater range of oxidation states than Lanthanides. 2 marks

Q.14. Explain the following giving one example for each:

- (i) Reimer-Tiemann reaction
- (ii) Friedel Craft's acetylation of anisole. 2 marks

Q.15. How would you obtain

- (i) Picric acid (2, 4, 6-trinitrophenol) from phenol
- (ii) 2-Methylpropene from 2-methylpropanol?

Q.16. What is essentially the difference between  $\alpha$  -form of glucose and  $\beta$  -form of glucose? Explain. 2 marks

Q.17. Describe what you understand by primary structure and secondary structure of proteins. 3 marks

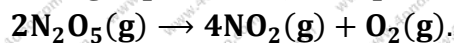
Q.18. Arrange the following polymers in increasing order of their intermolecular force:

- (i) Nylon 6, 6, Buna-S, Polythene.
- (ii) Nylon 6, Neoprene, Polyvinyl chloride. 2 marks

SECTION - C

Q.19. Silver crystallizes in face-center cubic unit cell. Each side of this unit cell has a length of 400 pm. Calculate the radius of the silver. (Assume the atoms just touch each other on the diagonal across the face of the unit cell. That is each face atom is touching the four corner atoms.) 3 marks

Q.20. Nitrogen pentoxide decomposes according to equation:



This first order reaction was allowed to proceed at 40 °C and the data below were collected: 3marks

$[N_2O_5](M)$	Time (min)
0.400	0.00
0.289	20.0
0.209	40.0
0.151	60.0
0.109	80.0



- (a) Calculate the rate constant. Include units with your answer.  
(b) What will be the concentration  $N_2O_5$  after 100 minutes?  
(c) Calculate the initial rate of reaction

**Q.21. Explain how the phenomenon of adsorption finds application in each of the following processes: 3 marks**

- (i) Production of vacuum  
(ii) Heterogeneous catalysis  
(iii) Froth Floatation process

**OR**

**What are the different types of RNA formed in the cell?**

**Q.22. Describe the principle behind each of the following processes: 3 marks**

- (i) Vapor phase refining of a metal.  
(ii) Electrolytic refining of a metal  
(iii) Recovery of silver after ore

**Q.23. Complete the following chemical equation: 3 marks**

- (i)  $Na_2CrO_4 + H_2SO_4 \rightarrow$   
(ii)  $MnO_2 + KOH + O_2 \rightarrow$   
(iii)  $HgCl_2 + SnCl_2 \rightarrow$

**Q.24. Write the name, stereochemistry and magnetic behavior of the following” 3 marks**

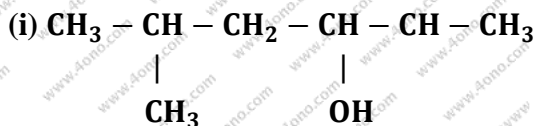
(At. nos. Mn = 25, Co = 27, Ni = 28)

- (i)  $K_4[Mn(CN)_6]$   
(ii)  $[Co(NH_3)_5Cl]Cl_2$

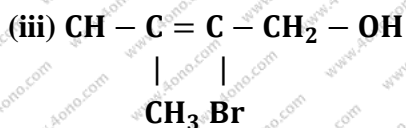
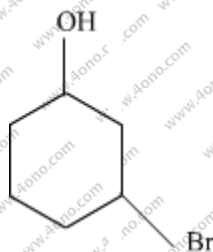
**Q. 25. Answer the following:**

- (i) Halo alkanes easily dissolve in organic solvents, why?  
(ii) What is known as a racemic mixture? give an example.  
(iii) Of the two bromoderivatives,  $C_6H_5CH(CH_3)Br$  and  $C_6H_5CH(C_6H_5)Br$ , which one is more reactive in  $S_N1$  substitution reaction and why? 3 marks

**Q.26. Name the following compounds according to IUPAC system. 3 marks**



(ii)



**Q.27. Describe the following giving one example for each: 3 marks**

- (i) Detergents
- (ii) Food preservatives
- (iii) Antacids

**SECTION - D**

**Q.28. (a) Differentiate between molarity and molality for a solution. How does a change in temperature influence their values? 5 marks**

**(b) Calculate the freezing point of an aqueous solution containing 10.50 g of  $\text{MgBr}_2$  in 200 g of water. (Molar mass of  $\text{MgBr}_2 = 184$  g) ( $K_f$  for water =  $1.86 \text{ K kg mol}^{-1}$ )**

**Or**

- (a) Define the terms osmosis and osmotic pressure. Is the osmotic pressure of a solution a colligative property? Explain.**
- (b) Calculate the boiling point of a solution prepared by adding 15.00 g of  $\text{NaCl}$  to 250.0 g of water. ( $K_b$  for water =  $0.512 \text{ K kg mol}^{-1}$ , Molar mass of  $\text{NaCl} = 58.44$  g)**

**Q.29. A translucent white waxy solid (A) on heating in an inert atmosphere is converted to its allotropic form (B). Allotrope (A) on reaction with very dilute aqueous  $\text{KOH}$  liberates a highly poisonous gas (c) having rotter fish smell. With excess of chlorine forms (D) which hydrolyses to compound (E). Identify compounds (A) to (E). 5 marks**

**OR**

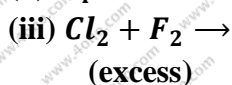
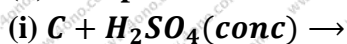
- (a) What is meant by unidentate, bidentate and ambidentate ligands? Give two examples for each.**
- (b) Calculate the overall complex dissociation equilibrium constant for the  $\text{Cu}(\text{NH}_3)_4^{2+}$  ion, given that  $\beta_4$  for this complex is  $2.1 \times 10^{13}$ .**

Q.30. (a) Explain the following: 5 marks

(i).  $NF_3$  is an exothermic compound whereas  $NCl_3$  is not.

(ii).  $F_2$  is most reactive of all the four common halogens.

(b) Complete the following chemical equation:



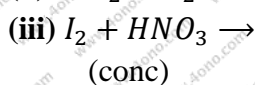
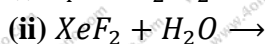
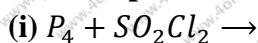
OR

(a) Account for the following:

(i) The acidic strength decreases in the order  $HCl > H_2S > PH_3$

(ii) Tendency to form pentahalides decreases down the group in group 15 of the periodic table.

(b) Complete the following chemical equation:



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the Best

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