

**0223****A**

Total No. of Questions – 33

Regd.

Total No. of Printed Pages – 3

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**Part - III**  
**CHEMISTRY, Paper - II**  
**(English Version)**

**Time : 3 Hours****Max. Marks : 60****SECTION - A****10 × 2 = 20**

- Note:** (i) Answer **ANY TEN** Questions  
(ii) Each Question carries **TWO** marks  
(iii) All are very short answer type questions.

1. What is Schottky defect?
2. What are f-centers?
3. How do you distinguish between crystal lattice and unit cell?
4. Define osmotic pressure.
5. What is an ideal solution?
6. State Henry's law.
7. What is coagulation ?
8. Name any two applications of colloidal solutions.
9. What is inert pair effect ?
10. What is tailing of mercury ? How is it removed ?
11.  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is blue in colour whereas anhydrous  $\text{CuSO}_4$  is colourless. Why?
12. Define denaturation as related to proteins.

13. What are essential and non-essential amino acids ? Give one example for each.
14. What is Tollens reagent? Explain its reaction with Aldehydes.
15. Write the reaction showing  $\alpha$ -halogenation of carboxylic acid and give its name (HVZ reaction).

### SECTION - B

**6 × 4 = 24**

- Note:** (i) Answer **ANY SIX** questions.  
 (ii) Each question carries **FOUR** marks.

(iii) All are of short answer type questions.

16. Derive Bragg's equation.
17. What is electrolysis? Give Faraday's first law of electrolysis.
18. What are different types of adsorption ? Give any four differences between characteristics of these different types.
19. What are lyophilic and lyophobic sols ? Compare the two terms in terms of stability and reversibility.
20. How are  $\text{XeF}_2$  and  $\text{XeF}_4$  prepared? Give their structures.
21. How is chlorine obtained in the laboratory? How does it react with the following?
  - a) cold dil. NaOH                      b) excess  $\text{NH}_3$
22. How does  $\text{SO}_2$  react with the following?
  - a)  $\text{Na}_2\text{SO}_3(\text{aq})$     b)  $\text{Cl}_2$               c)  $\text{Fe}^{+3}$  ions              d)  $\text{KMnO}_4$
23. Write the characteristics properties of transition elements.
24. Explain Werner's theory of coordination compounds with suitable examples.
25. Using IUPAC norms write the formulas for the following:
  - (i) Tetrahydroxozincate(II)
  - (ii) Hexamminecobalt(III) sulphate
  - (iii) Potassium tetrachloropalladate(II) and
  - (iv) Potassium tri(oxalato)chromate(III)

26. What are nucleic acids? Mention their two important functions.
27. Explain the mechanism of Nucleophilic bimolecular substitution ( $S_N^2$ ) reaction with one example.
28. With a suitable example write equations for the following:
  - i) Reimer-Tiemann reaction.
  - ii) Williamsons ether synthesis.
29. Accomplish the following conversions:
  - i) Benzoic acid to benzamide
  - ii) Aniline to p-bromoaniline

### SECTION - C

**2 × 8 = :**

- Note:**
- (i) Answer any **ANY TWO** questions.
  - (ii) Each question carries **EIGHT** marks.
  - (iii) All are long answer type questions.

30. (a) State Raoult's law.
- (b) Define mole fraction. Calculate the mole fraction of  $H_2SO_4$  in a solution containing 98% (w/w)  $H_2SO_4$  by mass.
31. (a) State and explain Kohlrausch's law of independent migration of ions.
- (b) Define Order of a reaction. Illustrate your answer with an example. Define molecularity of a reaction. Illustrate with an example.
32. How is nitric acid manufactured by Ostwald's process? How does it react with the following ?
 

a) Copper	b) Zn	c) $S_8$	d) $P_4$
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33. Describe the following:
 

i) Acetylation	ii) Cannizaro reaction
iii) Cross aldol condensation	iv) Decarboxylation