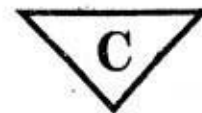


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Total No. of Questions - 21

Total No. of Printed Pages - 2

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## Part - III

## CHEMISTRY, Paper - II

(English Version)

Time : 3 hours

Max. Marks : 60

Note : Read the following instructions carefully.

- 1) Answer **all** questions of Section 'A'. Answer **any six** questions in Section 'B' and **any two** questions in Section 'C'.
- 2) In Section 'A', questions from Sr. Nos. 1 to 10 are of "Very short answer type". Each question carries **two** marks. Every answer may be limited to 2 or 3 sentences. Answer all these questions at one place in the same order.
- 3) In Section 'B', questions from Sr. Nos. 11 to 18 are of "Short answer type". Each question carries **four** marks. Every answer may be limited to 75 words.
- 4) In Section 'C', questions from Sr. Nos. 19 to 21 are of "Long answer type". Each question carries **eight** marks. Every answer may be limited to 300 words.
- 5) Draw labelled diagrams **wherever necessary** for questions in Sections 'B' and 'C'.

## SECTION A

10 × 2 = 20

Note : Answer **all** questions.

1. What are isotonic solutions? Give an example.
2. A reaction has a half-life of 10 minutes. Calculate the rate constant for the first order reaction.
3. What is the role of cryolite in the metallurgy of aluminium?
4. Mention the shape and draw a diagram of  $\text{XeO}_3$ .
5.  $\text{PH}_3$  has lower boiling point than  $\text{NH}_3$ . Why?
6. Aqueous  $\text{Cu}^{+2}$  ions are blue in color, where as aqueous  $\text{Zn}^{+2}$  ions are colorless. Why?
7. What is vulcanization of rubber?
8. What is PHBV? How is it useful to man?
9. How Aniline is obtained from Nitrobenzene?
10. Write about carbylamine reaction.

## SECTION B

6 × 4 = 24

Note : Answer any six questions.

11. State Raoult's law. Calculate the mass of nonvolatile solute (Molar mass 40 gr/mole<sup>-1</sup>) which should be dissolved in 114 gr of octane to reduce its vapour pressure to 80%.
12. Derive Bragg's equation.
13. What are emulsions? How they are classified? Give one example of each.
14. Define calcination and roasting. Give one example of each.
15. Write IUPAC names of the following coordination compounds.
  - a)  $[Co(NH_3)_6]Cl_3$
  - b)  $K_3[Fe(CN)_6]$
  - c)  $K_2[Pd(Cl)_4]$
  - d)  $[Ni(Co)_4]$
16.
  - a) What is denaturation of proteins?
  - b) What are essential Amino Acids? Give one example.
17. What are artificial sweetening agents and food preservatives? Give one example of each.
18. Explain  $SN^1$  and  $SN^2$  reactions

## SECTION C

2 × 8 = 16

Note : Answer any two questions.

19.
  - a) Define Kohlrausch's law of independent migration of ions. Give its applications.
  - b) Describe the salient features of the Collision theory of reaction rates of bimolecular reactions.
20.
  - a) How is chlorine prepared in Deacon's process? How does it react with the following?
    - i) Cold and dilute  $NaOH$
    - ii) Hot and concentrated  $NaOH$
  - b) Give chemical equations to manufacture of Sulphuric Acid by contact process.
21. Explain the following with one example.
  - a) Williamson's Synthesis
  - b) Kolbe's reaction
  - c) Hell-Volhard-Zelinsky (HVZ) reaction
  - d) Aldol condensation