



Nagarjuna Degree College
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Reg. No.

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I Semester B.Sc. Degree Examination, April - 2022

CHEMISTRY

Paper : I

(CBCS Scheme 2018-19 onwards Prior to 2020-21 Repeaters)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

- The question paper has two parts. Answer both the parts.
- Draw diagrams and write chemical equations wherever necessary.

PART - A

Answer any **eight** questions. Each question carries **2** marks.

(8×2=16)

- Differentiate $\log_2 x$ with respect to x .
- Define the term Joule - Thompson Co-efficient.
- Define Average velocity of a gas.
- What are chemical sensors? Give an example.
- State law of corresponding states.
- What is an azeotropic mixture? Give an example.
- What is electronegativity of an element?
- Define equivalent weight of an oxidising agent?
- What are significant figures?
- Explain homolytic bond cleavage with an example
- What are cumulated dienes? Give an example.
- Explain Wurtz reaction with an example.

PART - B

Answer any **Nine** questions. Each question carries **six** marks.

(9×6=54)

- Find the value of $\log 25$. If $\log 5 = 0.6990$.
 - Give any two applications of integration in chemistry.
- Describe Linde's process for the liquification of air.
 - Calculate RMS velocity of methane molecule at 400 K. Given molar mass = $16 \times 10^{-3} \text{ kg mol}^{-1}$ $R = 8.314 \text{ J/K/mol}$.

[P.T.O.]

15. a) Explain Andrew's isotherms of CO_2 gas.
b) What is inversion temperature?
16. a) State and explain Beer - Lambert's law. Mention any two of its applications.
b) A Mono chromatic radiation is incident on a solution of 0.05 molar concentration of absorbing sample. The intensity of radiation is reduced to $\frac{1}{4}$ th of the initial value after passing through 10 cm length of the solution. Calculate Molar extension co-efficient.
17. a) State and explain Nernst distribution law. Give its applications.
b) Write the principle of solvent extraction.
18. a) Describe Land bergers method of determination of molecular mass of a solute.
b) What are chalcogens? Give an example.
19. a) Define surface tension. Mention its SI unit. How does the surface tension of a liquid vary with temperature.
b) Give any two differences between Ideal and Non - Ideal solutions.
20. a) What is diagonal relationship? Explain any four properties which show diagonal relationship between Aluminium and Beryllium.
b) Define Atomic radii?
21. a) Define the term electron affinity explain the variation of electron affinity across a period and down the group in a periodic table.
b) Explain the variation of Atomic radii of halogens.
22. a) Explain the properties of halogens with respect to electronic configuration and ionisation energy.
b) What are cyclo alkenes? Give an example.
23. a) Describe the conformational analysis of n-butane.
b) What is Diels - Alder reaction? Give an example.
24. a) Explain hydroboration - oxidation reaction of alkenes.
b) How alkenes are prepared by corey - house reaction?
c) State Markownikoff's rule
25. a) Explain geometrical isomerism with an example.
b) What are carbenes? Give an example.
c) Define tautomers? Give an example.
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