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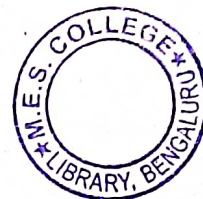
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I Semester B.Sc. Degree Examination, March/April - 2024

CHEMISTRY

Analytical, Inorganic & Organic Chemistry - 1

(CBCS NEP Scheme)



Paper : I

Time : 2½ Hours

Maximum Marks :60

Instructions to Candidates:

- 1) The question paper has three parts, Answer all the parts.
- 2) Draw diagram and write chemical equations wherever necessary.

PART - A

Answer any FIVE of the following questions. Each question carries 2 marks.(5×2=10)

1. Write any two types of determinate errors.
2. Mention any two precautions to be taken while handling concentrated acids.
3. State Heisenberg's uncertainty principle
4. Define electron gain enthalpy.
5. Explain negative Inductive effect with an example.
6. What is antiaromaticity? Give any examples of antiaromatic compounds.
7. Write the structure of 2-methyl -3- pentyne.

PART - B

Answer any Four of the following questions. Each question carries 5 marks

(4×5=20)

8. a) Define sampling. Discuss sampling methods for liquids.
b) Define Normality. (4+1)
9. What is meant by Titration curve? Explain the titration curve of a strong acid versus strong base (5)

[P.T.O.]



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10. a) Define atomic radius. Explain how does it vary along a period and down a group.
b) What are Isoelectronic Ions. (4+1)
11. a) State and explain Pauli-Exclusion principle.
b) Calculate the de-Broglie wavelength of an electron of mass 9.11×10^{-31} kg and velocity of a electron is $3 \times 10^8 \text{ ms}^{-1}$ ($h = 6.63 \times 10^{-34} \text{ Js}$). (3+2)
12. a) What are carbides? Discuss briefly about covalent carbides with an example.
b) Compare the relative size of Cl and Cl^{2-} . (3+2)
13. a) Explain
i) Electromeric effect
ii) Hyperconjugation effect.
b) What is homolytic cleavage. (4+1)

PART - C

Answer any Three of the following questions. Each question carries 10 marks.

(3×10=30)

14. a) What are determinate errors? Discuss different types of determinate errors.
b) What are the different types of analytical techniques? (6+4)
15. a) Derive Time Independent schrodinger wave equation.
b) Explain the Slater's rule for calculating screening constant and effective Nuclear charge. (6+4)
16. a) Explain the comparative trends of formation of hydrides of group 15 and group 16 elements.
b) Define electronegativity of an element. How is electronegativity is calculated by Mulliken's Method? (6+4)
17. a) Explain the relative acidic strengths of acetic and with propionic acid and chloroacetic acid.
b) Explain E_1 mechanism with an example.
c) Write the mechanism of chlorination of methane. (3+3+4)



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18. a) What are electrophiles and Nucleophiles? Give one example for each.

b) Give the reaction:

i) HBr to propene

ii) Ozone followed by hydrolysis.

c) Explain Hofmann elimination with an example.

(4+4+2)
