QP Code : U24A056

Reg. No : .....

Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

I SEMESTER B.A./B.Sc./B.Com/BSW (FYUGP) DEGREE EXAMINATION, November 2024

CHE1MN103 : Basic Inorganic & Green Chemistry

2024 Admission Onwards

(Credits: 4)

Time : 2 Hours **Maximum Marks : 70**

Section A

*[Answer **all**. Each question carries **3** Marks]* ***(Ceiling: 24 Marks)***

1. Define the term orbital. [BTL1]
2. What is Aufbau principle? [BTL2]
3. What is spin quantum number ? [BTL5]
4. Calculate the Bond order of N_2 molecule? [BTL3]
5. Apply the Law of Triads to find the atomic weight of an unknown element if the weights of the other two in the triad are known. [BTL3]
6. What is electron gain enthalpy? [BTL1]
7. Identify the two principles applied in qualitative analysis of cations. [BTL4]
8. What are green solvents? [BTL2]
9. Apply the concept of supercritical fluids to suggest a greener alternative in extraction processes. [BTL3]
10. Provide an example of a chemical process where microwave energy is used to improve efficiency. [BTL2]

Section B

*[Answer **all**. Each question carries **6** Marks]* ***(Ceiling: 36 Marks)***

11. Discuss the LCAO principle. [BTL2]
12. Compare Valence Bond and Molecular orbital theories. [BTL4]
13. Analyze the differences between electron affinity and electronegativity. Discuss how various factors, such as atomic size, nuclear charge, and electron shielding, influence these properties. [BTL4]
14. Categorize the elements of the periodic table into their respective blocks and explain the general properties of each block. [BTL1]

Turn Over

15. Calculate the number of molecules of oxalic acid in 100 mL of 0.01 M oxalic acid solution. [BTL2]

16. A student measured the mass of a body of 20 kg as 17.4,17,17.3 and 17.1. Interpret and comment on the findings of the student. [BTL4]

17. Propose the indicators used in the following titrations and justify your answers. [BTL3]
    i) HCl x Na_2CO_3
    ii) NaOH x Oxalic acid.

18. Apply the twelve principles of green chemistry to suggest alternatives to fossil fuels in chemical synthesis. [BTL3]

Section C

[*Answer* ***any one****. Each question carries* ***10*** *Marks****]*** ***(1x10=10 Marks)***

19. Explain the postulates of Bohr atom model. Mention its limitations too. [BTL4]

20. Explain the principles underlying the separation of cations into groups in qualitative analysis. [BTL2]

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