QP Code:U24A070

Reg. No : .....

Name : .....

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

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

CHE1MN100 : Inorganic Chemistry 1

2024 Admission Onwards

(Credits: 4)

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

Section A

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

1. What do the terms absolute error and relative error mean with regard to an analytical determination? [BTL4]
2. Distinguish between qualitative analysis and quantitative analysis. [BTL1]
3. Explain the shape of IF_7 molecule. [BTL1]
4. Explain Hannay-Smith equation. [BTL1]
5. State Fajan's rule of polarization. [BTL1]
6. Mention how nanomaterials find application as drug delivery vehicles in biomedicine. [BTL3]
7. Write on carbon nanotubes with regard to their structure and properties. [BTL1]
8. Summarize the electronic properties of nanomaterials. [BTL4]
9. Calculate the molarity of an aqueous Solution containing 8g of NaOH in 4 liters. [BTL3]
10. Distinguish between acidimetry and alkalimetry. [BTL5]

Section B

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

11. Explain the methods adopted to minimize determinate errors. [BTL2]
12. How can you apply Born-Haber cycle to calculate lattice energy? Explain using NaCl as an example. [BTL3]
13. State whether the molecule has zero or non -zero dipole moment in each of the following cases: [BTL1]
    i) CF_4
    ii) CH_3Cl
    iii) SF_6
    iv) BeF_2

Turn Over

14. Compare the Pauling and Mulliken's approaches to calculate electronegativities of different elements. [BTL4]

15. (a) Differentiate between fullerenes and carbon nanotubes. [BTL3]
(b) Outline the method of preparation of Fe_3O_4 nanoparticles.

16. Discuss the classification of nanostructures based on the electron confinement. [BTL4]

17. Calculate the mole fraction of solute in a 1.5 molal aqueous solution of urea? [BTL3]

18. Discuss the principle and advantages of double burette method of titration. [BTL5]

Section C

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

19. Define ionization energy and discuss the factors that determine the ionization energy of an element.Explain the variation of ionization energy along a period and down a group of the periodic table. [BTL2]

20. (a) Explain the term Complexometric titrations taking EDTA as the chelating agent. [BTL3]
(b) What are metal ion indicators?Explain the action of metal ion indicators with suitable examples.

< ********** >