QP CODE: 24801164

24801164

Reg No : .....

Name : .....

INTEGRATED MSC DEGREE EXAMINATION, FEBRUARY 2024

First Semester

INTEGRATED MSC BASIC SCIENCE-CHEMISTRY

CORE - ICH1CR03 - BASIC LEVEL IN INORGANIC CHEMISTRY

2020 Admission Onwards

D623A8D9

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Explain the catalytic property of transition metals.
2. The dipole moment of NH3 is more than that of NF3. Explain.
3. Why are the hydrides (MOH) of alkali metals so strongly basic in character? Why does the basic strength increase as we move down the group?
4. (a) Boron trichloride is monomeric while aluminium trichloride is dimeric. Why? (b) BF3 is a weaker Lewis acid than BCl3 and BBr3. why?
5. Why is the bond angle in H2O more than that in H2S?
6. Discuss stability order of Xenon halides.
7. Write a short note on B2 H6.
8. Explain salt-like carbides.
9. What is the main difference between isobars and isotones? Give suitable examples for each.
10. What is the purpose of control rods in a nuclear reactor? Name the commonly used control rod materials.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Calculate the electronegativity of chlorine in mullikens scale, ionization energy =13eV. And electron affinity=4.0eV
12. Explain Slater's rules with examples.

13. What are carbides? How do we classify them? Discuss the structure if silicon carbide. Give its important use in industry.

14. Give detailed description of oxoacids of nitrogen. Give their important characteristics and structures.

15. HF is liquid whereas, HCl, HBr and HI are gases. Explain.

16. Discuss the chemistry of liquid ammonia as a solvent. What are the advantages of liquid ammonia as a solvent?

17. Write a note on Nuclear models.

18. The half life of cobalt -60 is 5.26 years. Calculate the time in which one tenth of the amount will be left behind.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. What are non-stoichiometric compounds? A) Metal excess defects B) Metal deficiency defect, C)Extra interstitial negative ion.

20. Explain the preparation, properties structure and uses of KMnO4.

21. Explain the separation method used for the separation of Lanthanides from mixture.

22. Write a note on Radioactivity, its discovery, units, its detection and measurement.

(2×5=10 weightage)