

Roll No. :

Total No. of Questions : 11]

[Total No. of Printed Pages : 3

BPMS-509

M.Sc. (Previous) Examination, 2023

CHEMISTRY

Paper - I (CH-401)

(Inorganic Chemistry)

Time : 3 Hours]

[Maximum Marks : 75

Section-A

(Marks : 2 × 10 = 20)

Note :- Answer all *ten* questions (Answer limit 50 words). Each question carries 2 marks.

Section-B

(Marks : 5 × 5 = 25)

Note :- Answer all *five* questions. Each question has internal choice (Answer limit 200 words). Each question carries 5 marks.

Section-C

(Marks : 10 × 3 = 30)

Note :- Answer any *three* questions out of five (Answer limit 500 words). Each question carries 10 marks.

Section-A

1. (i) What is Bent rule ?
- (ii) What is *dp-pp* bonds ?
- (iii) Define energy profile of a location.

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- (iv) What are inert and labile complexes ?
- (v) Define the metallocarboranes with examples.
- (vi) What is metal-metal multiple bonds ?
- (vii) Define charge transfer spectra.
- (viii) Give to example of optically active metal chelate.
- (ix) What is metal nitrosyl compound ?
- (x) Write the some example of Green Chemistry.

Section-B

2. Explain the chelate effect with example.

Or

What is the stability constants and determine the pH metry method.

3. Write short notes on :

- (i) Acid and base hydrolysis
- (ii) Metal ligand bond cleavage

Or

Explain the trans effect with example.

4. Discuss the molecular orbital theory for tetrahedral complexes.

Or

Write short note on metal clusters.

5. Explain the B and b parameters.

Or

Explain the Orgel and Tanabe-Sugano diagram for transition metal complexes.

6. Discuss the metal complexes of deoxygenate complexes.

Or

Discuss the chemical and biochemical weapons.

Section-C

7. What is stepwise constants ? Give affecting factor of the stability metal complexes.
8. Draw Orgel diagram for d^2 to d^8 octahedral complexes and explain them.
9. Write notes on magnetic exchange coupling and spin crossover.
10. Explain structure, bonding and reaction metal carbonyls.
11. What do you mean by solventless synthesis ? Discuss the principle involved in Green Chemistry.