

**FIFTH SEMESTER B.Sc. DEGREE (SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2017**

(UG-CCSS)

CH 5B 09—INORGANIC CHEMISTRY—I

(Common for Industrial Chemistry)

Time : Three Hours

Maximum : 30 Weightage

I. Answer *all* the twelve questions. Each question carries a weightage of $\frac{1}{4}$. This section contains multiple choice, fill in the blanks and one word answer type questions :

- 1 Which is more ionic, BeCl_2 or BaCl_2 ?
- 2 Give the name or formula of an ore of Titanium.
- 3 The molecular formula of borazine is ———.
- 4 Which among the following forms hydrated salts ?
 - (a) Li.
 - (b) Na.
 - (c) K.
 - (d) Cs.
- 5 Identify the most powerful reducing agent among the following :
 - (a) HF.
 - (b) HCl.
 - (c) HBr.
 - (d) HI.
- 6 Name a redox indicator.
- 7 Give an example for a substance which is used as a primary standard in acid-alkali titrations.
- 8 Maximum oxidation state of manganese is ———.
- 9 Number of lone pairs of electrons in ClF_3 is ———.
- 10 What is borax chemically ?
- 11 Name an electron deficient molecule.
- 12 Hybridisation of sulphur in SO_4^{2-} is :
 - (a) sp .
 - (b) sp^2 .
 - (c) sp^3 .
 - (d) sp^3d .

($12 \times \frac{1}{4} = 3$ weightage)

II. Answer *all* the nine questions. Each question carries a weightage of 1 :

- 13 What are acid-base indicators ?
- 14 What is the action of heat on boric acid ?
- 15 Define zone refining.

Turn over

- 16 Suggest any *two* similarities between Li and Mg.
- 17 What do you mean by coprecipitation ?
- 18 The ionisation of acetic acid is suppressed by the addition of sodium acetate. Why ?
- 19 What are the important oxidation states of lanthanides ?
- 20 Distinguish between calcination and roasting.
- 21 How do electron affinity and electro negativity vary among halogens.

(9 × 1 = 9 weightage)

III. Answer any *five* questions. Each question carries a weightage of 2 :

- 22 The central atoms in CH₄, NH₃ and H₂O undergo the same type of hybridisation. But these molecules have different shapes. Explain.
- 23 Write a note on interhalogen compounds.
- 24 Outline the principles of hydrometallurgy.
- 25 Discuss the important properties of transition elements.
- 26 What is lanthanide contraction ? How does it originate ? Write any *two* consequences of lanthanide contraction.
- 27 Give a brief account of complexometric titrations.
- 28 Discuss the structure of diborane.

(5 × 2 = 10 weightage)

IV. Answer any *two* questions. Each question carries a weightage of 4 :

- 29 (a) Explain the term “dipole moment”.
(b) How is dipole moment helpful in determining the structure of molecules ?
- 30 (a) What are the important ores of nickel ?
(b) Explain the extraction of pure nickel from its principal ores by Mond’s process.
- 31 (a) Briefly explain the separation of noble gases by charcoal adsorption method.
(b) Comment on the electropositive character of iodine.

(2 × 4 = 8 weightage)