

D 70956

(Pages 2)

Name.....

Reg. No.....

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FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2014

(UG-CCSS)

Core Course

Chemistry

CH5 B09—INORGANIC CHEMISTRY—I

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 and fill in the blank type questions :

- 1 Dipole moment is zero for :
(a) CCl_4 . (b) NH_3 .
(c) H_2O . (d) CH_3Cl .
- 2 An electron deficient compound among the following is :—
(a) CH_4 . (b) B_2H_6 .
(c) NH_3 . (d) H_2O .
- 3 Which of the following metals is extracted by electrolytic reduction ?
(a) Mg. (b) Ag.
(c) Cu. (d) Ni.
- 4 A coloured ion among the following is :—
(a) SC^{3+} . (b) Ag^+ .
(c) Cu^{2+} . (d) Cu^+ .
- 5 A primary standard among the following is :
(a) $\text{K}_2\text{Cr}_2\text{O}_7$. (b) KMnO_4 .
(c) NaOH. (d) KOH.
- 6 The degree of polarity of a covalent bond is expressed in terms of _____.
- 7 A barium salt imparts _____ colour to the flame.
- 8 The reduction of the ore to the molten metal at high temperature is called _____.
- 9 Transition metals form a large number of alloys due to their comparable _____.
- 10 Eriochrome Black T is an indicator used in _____ titrations.
- 11 Zirconyl nitrate reagent is used in the elimination of _____ ion.
- 12 Presence of HCl in a saturated solution of H_2S , suppresses the dissociation of H_2S , due to _____.

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

Turn over

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

- 13 Write the Burn-Lande equation and explain the terms.
- 14 Why is ClF_3 molecule T-shaped ?
- 15 Why borazine is called inorganic benzene ?
- 16 Which has a higher ionisation energy B or Al ? Why ?
- 17 What is thermitite ?
- 18 Give the composition of German silver.
- 19 The ionisation energy values of transition elements are in the order $5d > 3d > 4d$. Why ?
- 20 Account for the catalytic properties of 'd' block elements.
- 21 How is oxalate ion eliminated ?

(9 × 1 = 9 weightage)

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

- 22 Explain sp , sp^2 and sp^3 hybridisations using suitable examples.
- 23 Illustrate the application of Born-Haber cycle in the calculation of lattice energy of an ionic compound.
- 24 How is boron nitride obtained ? What is its structure ?
- 25 Distinguish between calcination and roasting.
- 26 Explain the separation of lanthanides by ion-exchange method.
- 27 Write briefly on the variability of oxidation states exhibited by actinides.
- 28 What is coprecipitation ? How does it affect gravimetric analysis ?

(5 × 2 = 10 weightage)

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

- 29 (i) Explain the Charcoal adsorption method of separation of noble gases.
(ii) How will you prepare IF₅ ? What is its structure ?
- 30 Write short notes on :
 - (i) Zone refining ;
 - (ii) Mond's process ;
 - (iii) Ellingham diagram.
- 31 Discuss the application of solubility product and common ion effect in the precipitation of cations from solution.

(2 × 4 = 8 weightage)