D 70956 (Pages 2) Name

Reg. No. . . . . .

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 'A. 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 melasis 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) $Cu^{-}+$. (d) Cu+.

5 A primary standard among the following is :

(a) $K_2Cr_2O_7$. (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 x ¼ = 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 benzone ?

16 Which has a higher ionisation energy B *or* Al ? Why ?

17 What is thermite ?

18 Give the composition of German silver.

19 The ionisation energy values of transition elements ore in the order 5d> 3d> 4d. Why ?

20 Account for the catalytic properties of 'd' block elements.

21 How is oxalate ion eliminated ?

(9 x 1 = 9 weightage)

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

22 Explain sp.sp^ and spa 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 acinides.

28 What is coprecipitation ? How does it affect gravimetric analysis ?

(5 x 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 IFy ? 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 x 4 = 8 weightage)