

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2011 – 12 & thereafter)
SUBJECT CODE: 11CH/MC/IC14

B.Sc. DEGREE EXAMINATION, NOVEMBER 2013
BRANCH IV- CHEMISTRY
FIRST SEMESTER

REG.NO

COURSE : MAJOR CORE

PAPER : INORGANIC CHEMISTRY-I

TIME : 30 MINUTES

MAX.MARKS : 30

SECTION – A

ANSWER ON THE QUESTION PAPER ITSELF:

Answer ALL the questions:

(30 x 1 = 30 marks)

I Choose the right answer:

- 1 Atomic radius increases in the order
(a) Cl, F, Br, I (b) Br, Cl, F, I (c) F, Cl, Br, I (d) F, Cl, I, Br
- 2 Which among the following does not have diagonal relationship
(a) Li, Mg (b) N, P (c) Be, Al (d) B, Si
- 3 Electronegativity decreases in the order
(a) Li, Na, K, Rb (b) Na, Li, K, Rb
(c) Rb, K, Na, Li (d) Li, Na, Rb, K
- 4 Ionisation energy increases in the order
(a) Li, Na, K, Rb (b) Na, Li, K, Rb
(c) Rb, K, Na, Li (d) Li, Na, Rb, K
- 5 According to VSEPR theory the structure of BF_3 is
(a) Linear (b) hexagonal (c) tetrahedral (d) trigonal
- 6 The bond order of N_2 is
(a) 1 (b) 2 (c) 3 (d) 4
- 7 Froth floatation is used for
(a) Al (b) Au (c) Sn (d) Zn
- 8 van Arkel purification is used for
(a) Kr (b) Zr (c) Pr (d) Fr
- 9 $\text{Ce}^{4+} + \text{Fe}^{2+} \rightarrow$
(a) $\text{Ce}^{4+} + \text{Fe}^{2+}$ (b) $\text{Ce}^{5+} + \text{Fe}^{1+}$ (c) $\text{Ce}^{3+} + \text{Fe}^{3+}$ (d) $\text{Ce}^{2+} + \text{Fe}^{4+}$
- 10 The oxidation number of Mn in KMnO_4 is
(a) 7 (b) 5 (c) 3 (d) 1

II Fill up the blanks:

- 11 Ionic radius _____ from Li^+ to Cs^+ .
- 12 Ionisation energy of Na is _____ than that of Ne.
- 13 Electron affinity _____ along Cl, Br, I.
- 14 Water is _____ polar when compared to benzene.
- 15 Hybridization in BeH_2 is _____.
- 16 Bond angle in BF_3 is _____.
- 17 Gravity separation is used in the ore dressing of _____.
- 18 _____ is isolated by metal displacement.
- 19 $\text{Cr}_2\text{O}_7^{2-} + 6\text{Fe}^{2+} + 14\text{H}^+ \rightarrow 2\text{Cr}^{3+} + \text{_____} + 7\text{H}_2\text{O}$
- 20 $\text{Mn}^{2+} + \text{S}_2\text{O}_8^{2-} + 4\text{H}_2\text{O} \rightarrow \text{MnO}_4^- + 2\text{SO}_4^{2-} + \text{_____}$.

III State whether the following statements are true or false:

- 21 Inert pair effect is seen in lead.
- 22 Lattice energy has a positive sign.
- 23 Bond order of HF is one.
- 24 Zone refining is used for germanium.
- 25 The conversion of Iodine to iodide is a two-electron change.

IV Answer in a line or two:

- 26 What is screening effect?
- 27 Write down the Born-Landé equation.
- 28 What is hydrogen bonding?
- 29 What is smelting?
- 30 Write down the reaction between potassium permanganate and oxalic acid.

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2011 – 12 & thereafter)

SUBJECT CODE: 11CH/MC/IC14

B.Sc. DEGREE EXAMINATION, NOVEMBER 2013
BRANCH IV- CHEMISTRY
FIRST SEMESTER

COURSE : MAJOR CORE

PAPER : INORGANIC CHEMISTRY-I

TIME : 2½ HOURS

MAX.MARKS : 70

SECTION – B

Answer any FIVE questions:

(5 x 6 = 30 marks)

- 1 Write a note on electrochemical series.
- 2 Explain Born-Haber cycle.
- 3 State and explain Fajan's rules.
- 4 Explain the bond order and magnetic property of O₂ molecule using MO theory.
- 5 Write a note on Ellingham diagrams.
- 6 Write the chemical reaction between Fe²⁺ and MnO₄⁻ in the presence of H⁺ and calculate the equivalent weight of KMnO₄.
- 7 Explain any two methods of ore dressing with example.

SECTION – C

Answer any TWO questions:

(2 x 20 = 40 marks)

- 8 (a) Discuss Mulliken, Pauling and Allred-Rowchow scale of electronegativity. (15 + 5)
(b) Write a note on radius-ratio rules.
- 9 (a) Explain the structure of SF₆ by hybridization method and PCl₅ by VSEPR theory. (10+5+5)
(b) What are the consequences of hydrogen bonding?
(c) Explain how you would balance a redox equation by ion-electron method with an example.
- 10 Write notes on the refining of metals by (a) Electrolysis - Cu (b) van Arkel method - Ti (c) Zone refining - Si (d) Mond process - Ni (5+5+5+5)
