

**SARASWATHI NARAYANAN COLLEGE**  
**(Autonomous Institution Affiliated to Madurai Kamaraj University)**  
**(Reaccredited with Grade 'B' by NAAC)**  
**Madurai – 625 022.**

**B.Sc., Chemistry –Summative Examinations**  
Code: **LUCHCT31** Semester: **III**  
**INORGANIC CHEMISTRY - I**  
Duration: **3 Hrs.** Max: **75 Marks**

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**SECTION – A** **5 x 1 = 5**

**Answer ALL questions. Choose the correct answer. (K2 Level)**

1. Smelting involves reduction of the metal oxide with  
(a) Carbon (b) CO  
(c) Magnesium (d) Aluminum
2. The elements of group 1 are called alkali metals because:  
(a) their oxides form acidic solutions on treating with water  
(b) their peroxides form alkaline solutions on treating with water  
(c) their hydroxides form acidic solutions on treating with water  
(d) their oxides and hydroxides form alkaline solutions on treating with water
3. Willemite is an example for  
(a) ortho silicate (b) pyro silicate  
(c) cyclic silicate (d) sheet silicate
4. The formula of pernitric acid is:  
(a)  $\text{H}_2\text{N}_2\text{O}_3$  (b)  $\text{H}_2\text{NO}_2$   
(c)  $\text{HNO}_4$  (d)  $\text{H}_2\text{N}_2\text{O}_2$

5. Arrhenius defined an acid as:
- (a) a species that can donate a proton.
  - (b) a species that can accept a proton.
  - (c) a source of  $\text{OH}^-$  ions in water.
  - (d) a source of  $\text{H}^+$  ions in water.

**II. Fill in the blanks (K1 Level) 5 x 1 = 5**

- 6. The chemical formula of plaster of paris is -----.
- 7. The total number of elements in the group IB is -----.
- 8. The electronic configuration of boron atom is -----.
- 9. The formula for sodium cobaltinitrite is -----.
- 10. According to the Lewis theory, a base is \_\_\_\_\_

**SECTION-B 5 x 2 = 10**

**Answer ALL questions.**

- 11. Distinguish between ores and minerals. (K2)
- 12. Which group of metal is known as coinage metal? (K2)
- 13. Examine the structure of  $\text{SiO}_4^{4-}$ . (K3)
- 14. How will you prepare vanadium pentoxide? (K4)
- 15.  $\text{BF}_3$  is a Lewis acid. Rationalize this statement (K5)

**SECTION-C 5 x 5 = 25**

**Answer ALL questions choosing either (a) or (b).**

- 16. (a) Write the differences between calcinations and roasting. (K1)  
**(Or)**  
(b) Give the preparation of blue vitriol and bordeaux mixture.
- 17. (a) Examine anomalous behavior of lithium. (K2)  
**(Or)**  
(b) Compare and contrast between Group IA and Group IIA

elements.

- 18. (a) Interpret the diagonal relationship between B and Si. (K3)  
**(Or)**  
(b) Compare the properties of carbon with silicon.

- 19. (a) Give the preparation of permono and perdisulphuric acids. (K4)  
**(Or)**  
(b) Mention the properties and uses of chloroplatinic acid.

- 20. (a) Discuss the Bronsted-Lowry concept of acid and bases. (K5)

- (Or)**  
(b) Describe Lux-Flood concept of acid and base with Examples.

**SECTION-D 3 x 10 = 30**

**Answer any THREE questions in about 4 pages each.**

- 21. Elaborate the extraction of tungsten from its ores. (K1)
- 22. Discuss the diagonal relationship between Li and Mg. (K2)
- 23. Draw and illustrate the structure of diborane. (K3)
- 24. Write the preparation, properties and uses of titanium oxide. (K4)
- 25. Interpret the applications of HSAB principle (K5)