

1. Differentiate mineral and ore. (Pg.2)
  2. Define gangue. (Pg.3)
  3. Gravity separation. (Pg.3)
  4. Why we add NaCN in froth flotation process? (Pg.4)
  5. Explain cyanide leaching. (Pg.4)
  6. Define (i) Roasting (Pg.6,7), (ii) Calcination (Pg.7)
  7. What is auto-reduction? (Pg.10)
  8. What are the applications of Ellingham diagram? (Pg.12)
  9. Give the limitations of Ellingham diagram. (Pg.13)
  10. Explain electrochemical extraction of Al. (Pg.14,15)
  11. Explain electrolytic refining of Ag. (Pg.16)
  12. Explain zone refining. (Pg.16)
  13. Mond's process. (Pg.16)
  14. Explain how zirconium and titanium are purified? (Pg.17)
  15. Give the applications of (i) Al (Pg.17) (ii) Zn (Pg.17) (iii) Fe, (iv) Cu, (v) Au (Pg.18)
- Ln.2 P- Block elements – I
16. Give the anomalous properties of first element in P-block. (Pg.29)
  17. What is inert pair effect? (Pg.30)
  18. Explain the action of heat on boric acid. (Pg.34)
  19. How will you identify borate radical. (Pg.35)
  20. Structure of diborane. (Pg.37)
  21. What is hydroboration? (Pg.39)
  22. MCAfee process. (Pg.39)
  23. Give the types of alum. (Pg.40)
  24. Give the preparation and uses of potash alum. (Pg.40)
  25. What is burnt alum? (Pg.40)
  26. Differentiate graphite and diamond. (Pg.41,42)
  27. Fischer Tropsch Synthesis. (Pg.44)
  28. Structure of CO (Pg.44) and CO<sub>2</sub> (Pg.45).
  29. What are silicones? Give its preparation and uses. (Pg.46,47)
  30. Uses of silicones. (Pg.48)
  31. Explain the types of silicates with example. (Pg.48,49,50)

32. Write a note on zeolites. (Pg.50,51)

Ln.3 P-Block elements – II

33. Give the structure of HNO<sub>3</sub> (Pg.66), H<sub>3</sub>PO<sub>4</sub>. (Pg.72)
34. Prove that phosphine is a reducing agent. (Pg.69)
35. Holmes signal. (Pg.70)
36. Explain the bleaching action of SO<sub>2</sub>. (Pg.77)
37. Preparation of H<sub>2</sub>SO<sub>4</sub> by contact process. (Pg.78)
38. Prove H<sub>2</sub>SO<sub>4</sub> is a powerful dehydrating agent. (Pg.78)
39. Test for sulphate and sulphuric acid. (Pg.80)
40. Deacon's process. (Pg.83)
41. Uses of chlorine. (Pg.86), HCl (Pg.87)
42. Interhalogen compounds and properties. (Pg.89,90)
43. Structure of interhalogen compounds. (Pg.90)
44. Preparation of Xenon fluorides. (Pg.92)
45. Uses of He, Ne, Ar, Kr. (Pg.93)

Ln.4 Transition and inner transition elements

46. Transition elements form variable oxidation state. Why? (Pg.106)
47. What are interstitial compounds? (Pg.111)
48. Transition elements form alloy why? (Pg.111)
49. Transition elements form complexes. Why? (Pg.112)
50. Preparation of K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>. (Pg.112,113)
51. Prove K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> as an oxidising agent. (Pg.113,114)
52. Chromyl chloride test. (Pg.114)
53. Structure of dichromate ion. (Pg.113)
54. Structure of permanganate ion. (Pg.116)
55. Calculate the equivalent weight of KMnO<sub>4</sub> in acid, basic and neutral medium. (Pg.118)
56. Position of Lanthanides in the periodic table. (Pg.120,121)
57. Lanthanide contraction and its consequences. (Pg.121,122)
58. Differentiate lanthanoids and actinoids. (Pg.123,124)
59. Gd<sup>3+</sup> is colourless why?
60. Which is more stable Fe<sup>2+</sup> or Fe<sup>3+</sup> why?
61. Give the Electronic configuration of Ce<sup>4+</sup>, Co<sup>2+</sup>.
62. Out of Lu(OH)<sub>3</sub> and La(OH)<sub>3</sub> which is more basic why?
63. Cr<sup>2+</sup> is strongly reducing while Mn<sup>3+</sup> is strongly oxidising why?
64. Cu<sup>2+</sup> is coloured and Zn<sup>2+</sup> is colourless why?

#### Ln.5 Coordination chemistry

65. Werner's theory. (Pg.132)
66. Linkage isomerism, coordination isomerism, ionisation isomerism. (Pg.142)
67. Solvate isomerism. (Pg.143)
68. Valence bond theory. (Pg.148,149)
69. Limitations of VBT. (Pg.152)
70. Crystal field theory. (Pg.153,154)
71. Crystal field splitting energy. (Pg.155)
72. Bonding in metal carbonyls. (Pg.162)
73. Applications of coordination complexes. (Pg.166)
74. Give one test to differentiate  $[\text{CO}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$  and  $[\text{CO}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$ .
75.  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  is coloured while  $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$  is colourless why?
76.  $[\text{Ni}(\text{CN})_4]^{2-}$  is diamagnetic while  $[\text{NiCl}_4]^{2-}$  is paramagnetic explain.
77. A solution of  $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$  is green. Whereas a solution of  $[\text{Ni}(\text{CN})_4]^{2-}$  is colourless explain.

#### Ln.6 Solid state

78. Differentiate crystalline and amorphous solids. (Pg.178)
79. Define isotropy and anisotropy. (Pg.178)
80. Molecular solids and its types. (Pg.179,180)
81. Characteristics of ionic solids. (Pg.179)
82. Define (i) Unit cell (Pg.180) (ii) Crystal lattice (Pg.180)
83. Calculate the no. of atoms per unit cell of SC. (Pg.183), BCC (Pg.183), FCC (Pg.184)
84. Bragg's equation. (Pg.184)
85. Packing efficiency. (Pg.187)
86. Calculate the packing efficiency for SC (Pg.187,188), BCC (Pg.188,189), FCC (Pg.192)
87. What is radius ratio? Give its use. (Pg.192)
88. Schottky defect. (Pg.193,194)
89. Frenkel defect, metal excess defect. (Pg.194)
90. Metal deficiency defect, impurity defect. (Pg.195)
91. Differentiate octahedral and tetrahedral voids.
92. Ionic solids conducts electricity in molten state. Why?

#### Ln.7 Chemical Kinetics

94. Define rate. (Pg.205)
95. State rate law. (Pg.208)
96. Differentiate rate and rate constant of a reaction. (Pg.209)
97. What is an elementary reaction? Give eg. (Pg.210)
98. Differentiate order and molecularity? (Pg.210)
99. Derive integrated rate law for a first order reaction. (Pg.212,213)
100. Give examples for first order reaction. (Pg.213)
101. Pseudo first order reaction. (Pg.214)
102. Integrated rate law for zero order reaction. (Pg.214,215)
103. Examples for zero order reaction. (Pg.215)
104. Define Half life period. (Pg.215)
105. Prove that  $t_{1/2}$  for a first order reaction is independent on the initial concentration. (Pg.215)
106. Prove that  $t_{1/2}$  for a zero order reaction is directly proportional to the initial concentration. (Pg.216)
107. Show that  $t_{99.9\%} = 10t_{1/2}$ . (Pg.217)
108. Collision theory. (Pg.217-219)
109. Arrhenius equation. (Pg.210,211)
110. Explain the factors affecting the reaction rate. (Pg.222,223)