EXERCISE-I

Occurrence

1. The salt which is least likely to be found in minerals is
(A) Chloride (B) Sulphate
(C) Sulphide (D) Nitrate

2. Metal which can be extracted from all the three dolomite, magnesite and carnallite is
(A) *Na* (B) *K*
(C) *Mg* (D) *Ca*

3. Cinnabar is an ore of
(A) *Hg* (B) *Cu*
(C) *Pb* (D) *Zn*

4. Metallurgy is the process of
(A) Concentrating the ore
(B) Roasting the ore
(C) Extracting the metal from the ore
(D) Adding carbon to the ore in blast furnace

5. What is believed to be the second most common element in the universe
(A) Helium (B) Hydrogen
(C) Nitrogen (D) Silicon

6. Which of the following substances consists of only one element
(A) Marble (B) Sand
(C) Diamond (D) Glass

7. Which of the following minerals is not an ore of aluminum
(A) Bauxite (B) Gypsum
(C) Cryolite (D) Corundum

8. An example of halide ore is
(A) Galena (B) Bauxite
(C) Cinnabar (D) Cryolite

9. Which of the following is not an ore
(A) Bauxite (B) Malachite
(C) Zinc blende (D) Pig iron

10. "Chile saltpetre" is an ore of
(A) Iodine (B) Sodium
(C) Bromine (D) Magnesium

11. Which ore is used for the manufacture of iron
(A) Cryolite (B) Bauxite
(C) Haematite (D) Chalcopyrites

12. Formula of magnetite is
(A) Fe_2O_3 (B) FeS_2
(C) $FeCO_3$ (D) Fe_3O_4

13. Which of the following is ferrous alloy
(A) Invar (B) Solder
(C) Magnalium (D) Type metal

14. Which of the following ores does not represent the ore of iron
(A) Haematite (B) Magnetite
(C) Cassiterite (D) Limonite

15. The formula of haematite is
(A) Fe_3O_4 (B) Fe_2O_3
(C) $FeCO_3$ (D) FeS_2

16. Which metal is not silvery white
(A) *Ni* (B) *Cu*
(C) *Na* (D) *Sn*

17. Azurite is an ore of
(A) *Ag* (B) *Cu*
(C) *Pt* (D) *Au*

18. Copper can be extracted from
(A) Kupfernickel (B) Dolomite
(C) Galena (D) Malachite

19. Which of the following ore is called malachite
(A) Cu_2S (B) $CuCO_3.Cu(OH)_2$
(C) Cu_2O (D) $CuCO_3$

20. Argentite is a mineral of
(A) Copper (B) Silver
(C) Platinum (D) Gold

21. Which one of the following is the most abundant element in the universe
(A) Nitrogen (B) Hydrogen
(C) Oxygen (D) Silicon

22. Among the following statements, the incorrect one is
(A) Calamine and siderite are carbonates
(B) Argentite and cuprite are oxides
(C) Zinc blende and pyrites are sulphides
(D) Malachite and azurite are ores of copper

23. Which one of the following ores is a chloride
(A) Horn silver (B) Zincite
(C) Bauxite (D) Felspar

24. Aluminium is most abundant in earth crust yet it is obtained from bauxite because
(A) Bauxite is available in larger quantity
(B) Of easy extraction of aluminium from it
(C) Bauxite contains maximum aluminium
(D) Bauxite is less impure

25. An ore of potassium is
(A) Bauxite (B) Solomite
(C) Carnallite (D) Cryolite

26. The molecular formula of cryolite is
(A) Fe_3O_4 (B) Na_3AlF_6
(C) $Na_2Al_2O_3$ (D) All of these

27. All ores are minerals, while all minerals are not ores because
(A) The metal can't be extracted economically from all the minerals
(B) Minerals are complex compounds
(C) The minerals are obtained from mines
(D) All of these are correct

28. Corundum is an ore of
(A) Copper (B) Boron
(C) Aluminium (D) Sodium

29. Which one of the following is correct
(A) A mineral cannot be an ore
(B) An ore cannot be a mineral
(C) All minerals are ores
(D) All ores are minerals

30. Which ore contains both iron and copper?
(A) Cuprite (B) Chalcocite
(C) Chalcopyrite (D) Malachite

31. Formula of Felspar is
(A) $K_2O.Al_2O_3.6SiO_2$
(B) $K_2O_3.Al_2O_3.6Si_2.O_2.2H_2O$
(C) $Al_2O_3.2SiO_2.2H_2O$
(D) $3MgO.4SiO_2.H_2O$

32. Chile saltpetre is
(A) $NaNO_3$ (B) KNO_3
(C) Na_2SO_4 (D) $Na_2S_2O_3$

33. Which of the following is not an ore of magnesium
(A) Magnesite (B) Dolomite
(C) Gypsum (D) Carnalite

34. Which of the following is not a mineral of iron ?
(A) Magnetite (B) Siderite
(C) Smithsonite (D) Limonite

35. The ore carnalite is represented by structure:
(A) $Na_2Al_2O_3$ (B) Na_3AlF_6
(C) $KCl.MgCl_26H_2O$ (D) Fe_3O_4

36. Which of the following metal is sometimes found native in nature
(A) *Al* (B) *Cu*
(C) *Fe* (D) *Mg*

37. The most abundant metal in the earth crust is
(A) *Na* (B) *Mg*
(C) *Al* (D) *Fe*

38. Indicate the mineral from which copper is manufactured
(A) Galena (B) Cuprite
(C) Sphalerite (D) Chalcopyrite

39. The principal ores of silver are argentite, horn silver and pyrargyrite. Their formula respectively are
(A) $Ag_2S, AgCl$ and $AgSbS_2$
(B) $AgCl, AgSbS_2$ and Ag_2S
(C) $AgSbS_2, Ag_2S$ and $AgCl$
(D) $AgCl, Ag_2S$ and $AgSbS_2$

40. The most important ore of tin is
(A) Cassiterite (B) Cryolite
(C) Cerussite (D) None of these

Concentration

41. For which ore of the metal, froth floatation method is used for concentration
(A) Horn silver (B) Bauxite
(C) Cinnabar (D) Haematite

42. Cyanide process is used in the extraction of
(A) *Au* (B) *Ag*
(C) both (A) and (B) (D) *Cu*

43. Cassiterite is concentrated by
(A) Levigation
(B) Electromagnetic separation
(C) Floatation
(D) Liquifaction

44. Froth floatation process for the concentration of ores is an illustration of the practical application of
(A) Adsorption (B) Absorption
(C) Coagulation (D) Sedimentation

45. Iron ore is concentrated by
(A) Froth floatation
(B) Electrolysis
(C) Roasting
(D) Magnetic treatment

46. An ore of tin containing $FeCrO_4$ is concentrated by
(A) Magnetic separation
(B) Froth floatation
(C) Electrostatic method
(D) Gravity separation

47. One of the following metals forms a volatile compound and this property is taken advantage for its extraction. This metal is
(A) Iron (B) Nickel
(C) Cobalt (D) Tungsten

48. Bauxite ore is concentrated by
(A) Froth flotation
(B) Electromagnetic separation
(C) Chemical separation
(D) Hydraulic separation

49. In extraction of copper, we use
(A) Cu_2S
(B) Pyrites
(C) Silver argentocyanide
(D) $CuFeS_2$

50. Which metal is most difficult to be extracted from its oxide
(A) *Cs* (B) *Ag*
(C) *Zn* (D) *Mg*

Roasting & Calcination

51. In order to bring initial chemical change in the ore, the process of heating of ore below its melting point is known as
(A) Reduction (B) Smelting
(C) Calcination (D) Roasting

52. Matte contains mainly
(A) Cu_2S and FeS (B) CuS and Fe_2S_3
(C) Fe (D) Cu_2S

53. The substance which is mixed with the ore for removal of impurities is termed as
(A) Slag (B) Gangue
(C) Flux (D) Catalyst

54. The cheap and having high melting point compound used in furnace is
(A) *PbO* (B) *CaO*
(C) *HgO* (D) *ZnO*

55. Which of the following substance can be used for drying gases
(A) $CaCO_3$ (B) Na_2CO_3
(C) $NaHCO_3$ (D) *CaO*

56. Which one of the furnaces among the following can produce the highest temperature
(A) Muffle furnace
(B) Blast furnace
(C) Reverberatory furnace
(D) Electric furnace

57. The process of heating the ore strongly in excess of air so that the volatile impurities are removed and the ore is changed to oxide is known as
(A) Calcination (B) Roasting
(C) Froth floatation (D) Leaching

58. The role of calcination in metallurgical operations is
(A) To remove moisture
(B) To decompose carbonate
(C) To drive off organic matter
(D) To achieve all the above

59. Calcination is the process of heating the ore
(A) In a blast furnace (B) In absence of air
(C) In presence of air (D) None of these

60. Smelting is termed to the process in which
(A) The ore is heated in the absence of air
(B) Ore is cold
(C) The ore is heated in the presence of air
(D) Ore is melted

61. Flux added in the extraction of iron is
(A) Silica (B) Felspar
(C) Limestone (D) Flint

62. The smelting of iron in the blast furnace involves all the following process except
(A) Oxidation (B) Reduction
(C) Decomposition (D) Sublimation

63. In the manufacture of iron from haematite, the function of lime stone is as
(A) A reducing agent (B) Flux
(C) Slag (D) Gangue

64. The slag obtained during the extraction of copper from copper pyrites is composed mainly of
(A) $CaSiO_3$ (B) $FeSiO_3$
(C) $CuSiO_3$ (D) SiO_2

65. Complex is formed in the extraction of
(A) Na (B) Cu
(C) Ag (D) Fe

66. Which of the following metal is extracted by amalgamation process
(A) Tin (B) Silver
(C) Copper (D) Zinc

67. The reaction $2ZnS + 3O_2 \rightarrow 2ZnO + 2SO_2$ in the metallurgical process of zinc is called
(A) Calcination (B) Cupellation
(C) Smelting (D) Roasting

68. Calcination is used in metallurgy for removal of
(A) Water and sulphide (B) Water and CO_2
(C) CO_2 and H_2S (D) H_2O and H_2S

69. Which of the following is slag
(A) CaO (B) $CaSO_4$
(C) $CaSiO_3$ (D) SiO_2

70. The impurties associated with minerals used in metallurgy are collectively called
(A) Slag (B) Flux
(C) Gangue (D) Ore

71. Which of the following ores is subjected to roasting during metallurgical operations for getting the metal oxide
(A) Horn silver (B) Zinc blende
(C) Malachite (D) Limonite

72. A metal obtained directly by roasting of its sulphide ore is
(A) Cu (B) Pb
(C) Hg (D) Zn

73. In blast furnace, the highest temperature is in
(A) Reduction zone (B) Slag zone
(C) Fusion zone (D) Combustion zone

74. The process of roasting of an ore is carried out in the
(A) Absence of air (B) Presence of air
(C) Limited supply of air (D) None of these

75. Flux is used to remove
(A) Acidic impurities
(B) Basic impurities
(C) All impurities from ores
(D) Both (A) and (B)

76. During extraction of Fe; slag obtained is
(A) FeO (B) $FeSiO_3$
(C) $MgSiO_3$ (D) $CaSiO_3$

77. The final step for the extraction of copper from copper pyrite in Bessemere converter involves the reaction
(A) $4Cu_2O + FeS \rightarrow 8Cu + FeSO_4$
(B) $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$
(C) $2Cu_2O + FeS \rightarrow 4Cu + Fe + SO_2$
(D) $Cu_2S + 2FeO \rightarrow 2Cu + 2FeCO + SO_2$

78. Flux is used to remove
(A) Silica
(B) Metal oxide
(C) All impurities from ores
(D) Silica and undesirable metal oxide

79. Roasting is done in
(A) Blast furnace
(B) Open hearth furnace
(C) Electric furnace
(D) None of these

80. Which of the following fluxes is used to remove acidic impurities in metallurgical process
(A) Silica (B) Lime stone
(C) Sodium chloride (D) Sodium carbonate

Reduction to free Metal

81. Furnaces are lined with calcium oxide because
(A) It gives off oxygen on heating
(B) It gives strong light on heating
(C) It is refractory and basic
(D) It is not affected by acids

82. The substance used in the thermite process of reducing metal ores is
(A) Aluminium (B) Thorium
(C) Heated Pt gauge (D) Carbon

83. The electrolytic method of reduction is employed for the preparation of metals that
(A) Are weakly electropositive
(B) Are moderately electropositive
(C) Are strongly electropositive
(D) Form oxides

84. Which of the following metals cannot be extracted by carbon reduction process
(A) *Pb* (B) *Al*
(C) *Hg* (D) *Zn*

85. Carbon reduction process is used for the extraction of
(A) *Hg* (B) *Zn*
(C) *Cr* (D) *Fe*

86. Among the following groups of oxides, the group containing oxides that cannot be reduced by carbon to give the respective metals is
(A) Cu_2O, K_2O (B) Fe_2O_3, ZnO
(C) CaO, K_2O (D) PbO, Fe_3O_4

87. Which one of the following metals is extracted by thermal reduction process?
(A) Copper (B) Iron
(C) Aluminium (D) Magnesium

88. Chemical reduction is not suitable for converting
(A) Bauxite into aluminium
(B) Cuprite into copper
(C) Haematite into iron
(D) Zinc oxide into zinc

89. In alumino–thermite process, aluminium is used as
(A) Oxidising agent (B) Flux
(C) Reducing agent (D) Solder

90. Which metal is extracted by electrolytic reduction method
(A) *Cu* (B) *Al*
(C) *Fe* (D) *Ag*

91. Which of the following processes does not involve a catalyst
(A) Haber's process (B) Thermite process
(C) Ostwald process (D) Contact process

92. Thermite process is used to extract metals
(A) When their oxides can't be reduced by carbon
(B) When their carbonates do not yield oxides by thermal decomposition
(C) When their sulphides can't be converted into oxides by roasting
(D) When their melting points are very high

93. Iron is obtained on a large scale from Fe_2O_3 by
(A) Reduction with *Al*
(B) Reduction with *CO*
(C) Reduction with H_2
(D) Reduction with sodium

94. After partial roasting, the sulphide of copper is reduced by
(A) Reduction by carbon (B) Electrolysis
(C) Self–reduction (D) Cyanide process

95. High purity copper metal is obtained by
(A) Carbon reduction
(B) Hydrogen reduction
(C) Electrolytic reduction
(D) Thermite reduction

96. In the metallurgical extraction of zinc from ZnO the reducing agent used is
(A) Carbon monoxide (B) Sulphur dioxide
(C) Carbon dioxide (D) Nitric oxide

97. In order to refine "blister copper" it is melted in a furnace and is stirred with green logs of wood. The purpose is
(A) To expel the dissolved gases in blister copper
(B) To bring the impurities to surface and oxidize them
(C) To increase the carbon content of copper
(D) To reduce the metallic oxide impurities with hydrocarbon gases liberated from the wood

98. Aluminium is produced on a large scale by electrolysis of alumina, dissolved in fused cryolite and a little fluorspar. These two electrolytes, *cryolite* and *fluorspar* are respectively
(A) Na_3AlF_6 and CaF_2
(B) AlF_3 and KF
(C) Al_2C_6 and KCl
(D) $KCl.MgCl_2.6H_2O$ and MgF_2

99. Electrometallurgy is used for
(A) Transition metals
(B) Most reactive metals
(C) Noble metals
(D) Soft metals

100. The metal extracted by electrolysis of its fused salt is
(A) Iron (B) Lead
(C) Sodium (D) Copper

Refining of crude metal

101. In electrolytic refining, the impure metal is made is used to make
(A) Cathode (B) Anode
(C) Electrolytic bath (D) None of these

102. Of the following, which cannot be obtained by electrolysis of the aqueous solution of their salts
(A) Ag (B) Mg and Al
(C) Cu (D) Cr

103. Van Arkel method of purification of metals involves converting the metal to a
(A) Volatile stable compound
(B) Volatile unstable compound
(C) Non volatile stable compound
(D) None of the above

104. Zone refining is a method to obtain
(A) Very high temperature
(B) Ultra pure Al
(C) Ultra pure metals
(D) Ultra pure oxides

105. Which one of the following is manufactured by the electrolysis of fused sodium chloride
(A) $NaOH$ (B) $NaClO$
(C) Na (D) $NaClO_3$

106. A metal which is refined by poling is
(A) Sodium (B) Blister copper
(C) Zinc (D) Silver

107. Silver obtained from argentiferrous lead containing lead impurity is purified by
(A) Distillation
(B) Froth floatation
(C) Cupellation
(D) Treatment of KCN

108. If the impurity in a metal has a greater affinity for oxygen and is more easily oxidised than the metal, then the purification of metal may be carried out by
(A) Poling (B) Zone refining
(C) Electrolytic refining (D) Cupellation

109. Electric refining is used for refining of
(A) Lead (B) Copper
(C) Iron (D) Sodium

110. Zone refining is used for the purification of
(A) Cu (B) Au
(C) Ge (D) Ag