CHEMISTRY

BOOKS - R G PUBLICATION

GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Exercise

1. Explain the role of the following in the processes mentioned: Silica in the extraction of

copper.

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2. Explain the role of the following in the processes mentioned: Cryolite in the metallurgy of aluminium.

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3. Explain the role of the following in the processes mentioned: Depressant in the forth floatation process.

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4. Describe the role of the following in the processes mentioned: NaCN in the extraction of silver forms silver ore.

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5. Describe the role of the following in the processes mentioned: Limestone in the metallurgy of iron.

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6. Describe the role of the following in the processes mentioned: Iodine in the refining of zirconium.

7. Name two ores which can be concentrated by froth floatation process.

8. How is 'cast iron' different from pig iron?

9. Name the common elements present in the anode mud in electrolyte refining of copper. Why are they so present?

10. Name one metal which is refined by Van Arkel method?

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11. complete the following reaction

$Al_2O_3 + C \rightarrow$

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12. Which metal foils are used for wrapping chocolates?

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13. What are ores? Name one sulphide ore.

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14. Explain the role of Cryolite in the electrolytic reducion of alumina.

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15. How does the FeO impurity present in sulphide ore of copper is removed?

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16. Name one important ore of aluminium. Give its chemical composition.

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17. Write down the reaction taking place in different zones in the blast furnace during the extraction of iron.

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18. Name the method used for the refining of Nickel.

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19. Differentiate between 'minerals' and 'ores'.

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20. Distinguish between calcination and roasting.

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21. Name the main ore of iron.

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22. How is cast iron made from pig iron?

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23. Name the method used for the refining of Nickel.

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24. How copper is extracted from low grade ore?

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25. The process of removing matrix by fusing with flux is known as-

A. Calcination

B. Roasting

C. Smelting

D. Leaching

Answer:

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26. Iron ores are separated from its impurities by-

A. Hydraulic washing

B. Magnetic separation

C. Leaching

D. None of the above

Answer:

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27. The reason for using 'depressants' in Froth Flotation Method is-

A. To stabilize the fourth

B. To wet the gangue particles

C. To select which sulphide will come to the froth by preventing the other sulphide.

D. To adjust oil to water ratio.

Answer:

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28. One of the impurities present in bauxite is.

A. TiO_2

B. CuO

C. P_2O_3

D. MnO_2

Answer:

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29. Which of the folloiwng is not concentrated by froth floatation process?

A. Zinc blende

B. Pyrolusite

C. Copper pyrite

D. Pentlandite

Answer:

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30. Sodium tetracyano zincate(II) is produced as bi product during the extration of-

A. Gold

B. Copper

C. Zn

D. Ni

Answer:

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31. During roasting.

A. Oxides are reduced

B. Oxides are converted to metal.

C. Sulphides are reduced.

D. Sulphides are oxidised

Answer:

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32. The thermodynamic principles of metallurgy is based on-

A. The use of entropy concept only

B. The use of temperature and reducing agent.

C. Electrode potential value

D. Gibbs free energy

Answer:

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33. The chemical process in the production of steel from haemative ore involve

A. Reduction

B. Oxidation

C. Reduction followed by oxidation

D. Oxidation followed by reduction

Answer:

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34. Which of the following order represents correct carbon content?

A. Steel< Wrought iron < Pig iron

B. Wrought iron < Steel < pig iron

C. Steel < Pig iron < Wrought iron

D. Steel < Cast iron < Wrought iron.

Answer:

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35. Pig iron is obtained by reduction of Fe_2O_3-

A. In the presence of C and O_2

B. In the presence of C & $CaCO_3$

C. In the presence of C, O_2 & $CaCO_3$

D. In the presence of C only.

Answer:

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36. In the electrolysis of alumia, cryolite is added to-

A. Increaese the electric conductivity

B. Minimize the anode effect.

C. Remove impurities from alumina.

D. Rise the m.p. of alumia

Answer:

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37. Distillation process of refining is used for-

A. High m.p. metals

B. In the purification of mercury.

C. In the purification of aluminium ore.

D. to obtain high purity iron

Answer:

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38. The following reaction which represents refining of nickel is know as-

$$Ni + 4CO \xrightarrow{60^\circ C} Ni(CO)_4 \xrightarrow{177^\circ C} Ni + 4CO$$

A. Kroll process

B. Mond's process

C. Van Arkel method

D. Zone refining

Answer:

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39. Find out odd one.

A. Distillation

B. Liquation

C. Chromatographic method

D. Bayer's process

Answer:

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40. What are minerals?

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41. What is an Ore? Give example.

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42. Name the most abundant metal. Name the principal ore of this metal.

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43. Write formula of Malachite and Kaolinite.

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44. Write two important process which are used in removing unwanted materials from the ore.

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45. Give one example each from non-wettable substance and froth stabiliser used in froth floation process.

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46. What is the function of NaCN in froth flotation process?

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47. What is the significance of leaching in the extraction of aluminium?

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48. What happens when dolomite is calcined?

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49. What is copper matte?

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50. Why is the extraction of copper from pyrites more difficult than that from its oxide ore through reduction?

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51. Out of C and CO, which is a better reducing agent at 673 K?

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52. What is an Ellingham diagram?

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53. What is the function of limestone in the extraction of iron?

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54. Though scrap zinc is more reactive than scrap iron,iron is preferred for reducing the leached copper why?

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55. Write the reaction when silver is leached with KCN.

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56. Write the principle of liquation?

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57. Which process of refining is usefull to get ultrapure semiconductor elements?

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58. What is eluent?

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59. Write the composition of German Silver.

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60. Which is the purest form of commercial iron?

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61. Describe the role of SiO_2 in the extraction of Copper from Copper matte.

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62. Why Copper matte is put in Silica lined converter?

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63. What does a steep increase in the slope of a line an Ellingham diagram indicate?

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64. Name the process by which an ore of tin containing $FeCrO_4$ in concentrated.

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65. Write two important ores each from iron & copper.

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66. Describe the principle of froth flotation process.

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67. Write the reactions involved in leaching process of alumina from bauxite.

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68. Giving example differentiate between "roasting"& calcination.

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69. What is pyro metallurgy? Describe the conditions of the equation used in this process.

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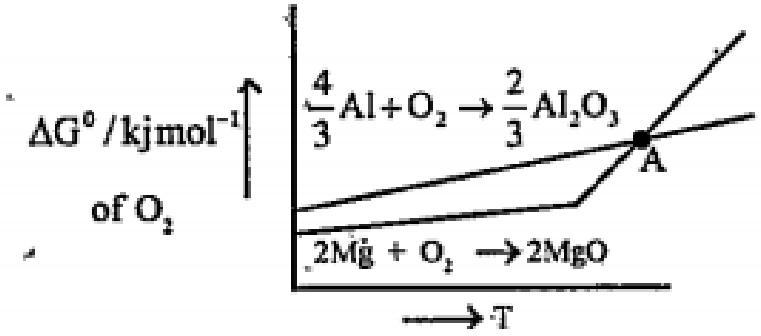
70. From the following diagram suggest a condition under which magnesium could reduce alumina.



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71. Write down the reaction taking place in different zones in the blast furnace during the extraction of iron.

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72. How wrough iron is prepared from cast iron?

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73. In reverberatory furnace how Cu is extracted from copper matte? Write various reactions?

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74. The reaction, $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr(\Delta G^\circ = -421KJ)$ is thermodynamically feasible as is apparent from the Gibbs energy value. Why does it not take place at room temperature?

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75. Why Zinc not extracted from Zinc oxide through reduction using CO?

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76. What is the role of graphite rod in the electrometallurgy of aluminium?

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77. What is hydro metallurgy? How Cu is extracted by this method.

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78. Name the processes from which Chlorine is obtained as a by product.

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79. Outline the prinicples of refining of metals by the following methods. Zone refining.

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80. Describe the underlying principle of each of the following metal refining methods. Electrolytic

refining of metals.

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81. Outline of refining of metals by the following methods.

Vapour phase refining.

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82. Outline of refining of metals by the following methods.

Van Arkel method.

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83. What is Hall-Heroult process? How many Al can be obtained by burning about 1kg carbon anode?

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84. What criterion is followed for the selection of the stationary phase in chromatography?

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85. Zinc and not Copper is used for the recovery of silver from the complex. `[Ag(CN)_2] discuss.

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86. The extraction of Au by leaching with NaCN involves both oxidation and reduction. Justify.

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87. What is the role of iodine in the refining of titanium?

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88. Describe how the following change are brought about pig iron into steel.

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89. Whose metal dust is used as a reducing agent in dye industry?

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90. Describe the role of the following in the processes mentioned: Limestone in the metallurgy of iron.

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91. Explain the role of the following in the processes mentioned: Depressant in the forth floatation process.

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92. Why is the reduction of a metal oxide easier if the metal formed is in the liquid state at the temperature of reduction?

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93. Which solution is used for the leaching of silver metal in the presence of air in the metallurgy of silver?

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94. Out of C and CO, which is better reducing agent at the lower temperature range in the blast furnance to extract iron from the oxide ore?

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95. Describe the role of SiO_2 in the extraction of Copper from Copper matte.

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96. Which method is used for obtaining high purity metals for semi conductor? Describe the process.

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97. Draw the Schematic diagram of column chromatograph for industrial use.

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98. What chemical principle is involved in choosing a reducing agent for getting the metal from its oxide ore? Consider the metal oxide Al_2O_3 and Fe_2O_3 and Justifuy the choice of the reducing agent.

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99. Give reasons for the following. Alumina is dissolved in cryolite for electrolysis instead of being electrolysed directly.

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100. Why Zinc oxide can be reduced to the metal by heating with Carbon andnot with Cr_2O_3?

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101. Why is the extraction of copper from pyrites more difficult than that from its oxide ore through reduction?

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102. Why is the extraction of copper from pyrites more difficult than that from its oxide ore through reduction?

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