CHEMISTRY

BOOKS - MBD -HARYANA BOARD

GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Objective Type Questions

1. In which of the following, the ore does not match with the metal ?

A. Copper - Malachite

B. Iron - Haematite

C. Aluminium - Bauxite

D. Zinc - Siderite

Answer: D

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2. During Roasting of ZnS, it converts to :

A. ZnO

B. $ZnSO_4$

C. $ZnCO_3$

D. Zn

Answer: D

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3. Which process is used for the purification of Zirconium ?

A. Mond Process

B. Van Arkel

C. Hall- Heroult

D. None of the above.

Answer: B

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4. Coke is used in metallurgy chiefly as :

A. Flux

B. Reducing agent

C. Slag

D. None of these

Answer: B

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5. In electrorefining, the impure metal is made :

A. Cathode

B. Anode

C. Cathode or Anode

D. None of these

Answer: A

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6. Which of the following is not an ore of Iron ?

A. Calamine

B. Siderite

C. Haematite

D. Magnetic

Answer: A

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7. The ores that are concentrated by forth flotation method are :

A. Sulphides

B. Oxides

C. Carbonates

D. Silicates.

Answer: A

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8. The chief constituent s of German Silver alloy are :

A. Cu, Zn, Ni

B. Cu, Zn, Ag

C. Zn, Cu, Cr

D. Zn, Cu, Sn

Answer: A

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9. Titanium can be obtained by :

A. Van Arkel Method

B. Electrorefining

C. Distillation

D. Liquation.

Answer: A

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10. Magnetite is an ore of :

A. Iron

B. Calcium

C. Copper

D. Zinc

Answer: A

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11. Malachite is an ore of :

A. Hg

B. Cu

C. Sn

D. Mn

Answer: B

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12. Mond's process is used for :

A. Ni

B. Cu

C. Fe

D. Al.

Answer: A

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13. Zinc blende is ore of :

A. Aluminium

B. Calcium

C. Copper

D. Zinc

Answer: D

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14. Bauxite is an ore of :

A. Aluminium

B. Calcium

C. Copper

D. Zinc

Answer: A

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15. Composition of Brass is :

A. Cu(60%) - Zn(40%)

B. Cu(80%) - Zn(20%)

C. Cu(80%) - Zn(10%)-Sn(10%)

D. None of the above.

Answer: B

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16. Thomas slag is :

A. Calcium silicate

B. Calcium phosphate

C. Barium silicate

D. Barium phosphate

Answer: A

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17. Sphalerite is ore of :

A. Iron

B. Calcium

C. Copper

D. Zinc

Answer: B

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18. Calamine is an ore of :

A. Iron

B. Calcium

C. Copper

D. Zinc

Answer: D

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19. In which of the following minerals Al is not present ?

A. Cryolite

B. Mica

C. Fledspar

D. Fluorspar

Answer: D

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20. Common impurities present is Bauxite are :

A. CuO

B. ZnO

C. Fe_2O_3

D. None of these

Answer: C

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Very Short Answer Type Questions

1. Differenatiate between "minerals " and " ores".

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2. What is thermite process ? Give one reaction ?

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

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4. Give two example of ores which can be concentrated by magnetic separation method.

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

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6. Why cannot Al be reduced by carbon ?

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7. In the reaction

$Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr, \Delta G^\circ = -421kJ$

is thermodynamically feasible. This is apparent from Gibbs energy value. Why does it not take place at room temperature ?

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8. It is true that under certain coditions magnesium can reduce SiO_2 and silicon can reduce MgO. What are those conditions ?

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

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10. Why is zinc not extracted from zinc oxide through reduction using CO ?

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11. Out of C and CO which is better reducing agentfor ZnO ?

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12. What is the role of graphite rod in the electrometallurgy of alumi-nium ?

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Short Answer Type Questions

1. Although thermodynamically feasible, in practice magnesium metal is not used for the reductionof alumina in the metallurgy of aluminium. Why ?

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2. How is copper extracted from low gade ores or scraps ?

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3. The value of $\Delta_f G^\circ$ for formation of Cr_2O_3 is $-540kJmol^{-1}$ and that of Al_2O_3 is $-827kJmol^{-1}$. Is reduction of Cr_2O_3 possible with Al ?

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4. Why is copper matte put in silica lined converter ?

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

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6. What is hydrometallurgy? Explain with an example.

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7. (a) What is the role of cryolite in the metallurgy of aluminium ?

(b) How is leaching carried out in case of low grade copper ores?

(c) Why is zinc not extracted from zinc oxide through reduction using CO?

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

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9. What is the role of depressant in froth floatation process?

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10. Describe a method for refining nickel.

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11. Copper can be extracted by hydrometallurgy but not zinc. Explain.

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

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13. How can you separate alumina from bauxite ore associated with silica ? Give equations.

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14. Giving examples, differentiate between roasting and calcination.

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15. Difine calcination with one example.

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16. How is cast iron different from pig iron?

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17. Why copper matte is put in silica lined converter ?

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18. The choice of a reducing agent in a particular case depends on thermodynamic factor. How far do you agree with this statement ? Support your opinion with two examples.

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19. Explain zone refining with a diagram

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20. Outline the principles of refining of metals by the following methods :

(i) Zone refining

(ii) Electrolytic refining

(iii) Vapour phase refining.

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21. Outline the principle of refining of metals by

(i) Zone refining.

(ii) Electrolytic refining.

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Long Answer Type Questions

1. How is zinc extracted ?

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2. Give the extraction of iron using Blast furnace.

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3. Why is cryolite added to alumina ? Give Hoope's electrolytic process of refining of aluminium.

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