



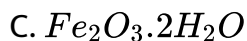
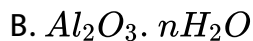
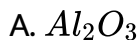
CHEMISTRY

BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

MATALLURGY

Evaluation Choose The Correct Answer

1. Bauxite has the composition



D. None of these

Answer: B

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2. Roasting of sulphide ore gives the gas (A). (A) is a colourless gas.

Aqueous solution of (A) is acidic. The gas (A) is

A. CO_2

B. SO_3

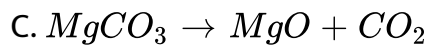
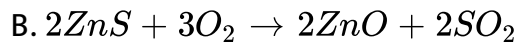
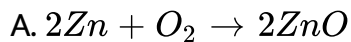
C. SO_2

D. H_2S

Answer: C

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3. Which one of the following reaction represents calcination ?



D. Both (a) and (c)

Answer: C



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4. The metal oxide which cannot be reduced to metal by carbon is

A. PbO

B. Al_2O_3

C. ZnO

D. FeO

Answer: B



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5. Which of the metal is extracted by Hall-Heroult process ?

A. Al

B. Ni

C. Cu

D. Zn

Answer: A



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6. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true ?

A. ΔG_f° of sulphide is greater than those for CS_2 and H_2S .

B. ΔG_r° is negative for roasting of sulphide ore to oxide

C. Roasting of the sulphide to its oxide is thermodynamically feasible.

D. Carbon and hydrogen are suitable reducing agents for metal sulphides.

Answer: D



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7. Wolframite ore is separated from tinstone by the process of

A. Smelting

B. Calcination

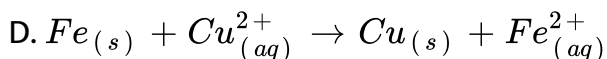
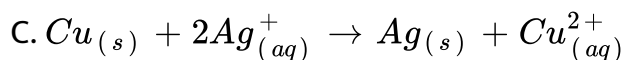
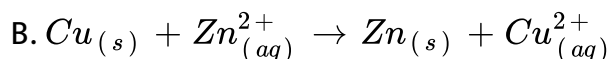
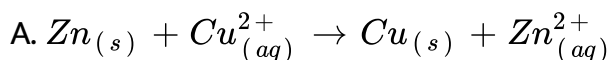
C. Roasting

D. Electromagnetic separation

Answer: D

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8. Which one of the following is not feasible



Answer: B

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9. Electrochemical process is used to extract

- A. Iron
- B. Lead
- C. Sodium
- D. silver

Answer: C



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10. Flux is a substances which is used to convert

- A. Mineral into silicate
- B. Infusible impurities to soluble impurities
- C. Soluble impurities to infusible impurities
- D. All of these

Answer: B



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11. Which one of the following ore is best concentrated by froath - floatation method ?

A. Megnatite

B. Hematite

C. Galena

D. Cassiterite

Answer: C



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12. In the extraction of aluminium from alumina by electrolysis, cryolite is added to

- A. Lower the melting point of alumina
- B. Remove impurities from alumina
- C. Decreases the electrical conductivity
- D. Increase the rate of reduction

Answer: A



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13. Zinc is obtained from ZnO by

- A. Carbon reduction
- B. Reduction using silver
- C. Electrochemical process
- D. Acid leaching

Answer: A



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14. Cupellation is a process used for the refining of

- A. Silver
- B. Lead
- C. Copper
- D. iron

Answer: A



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15. Extraction of gold and silver involves leaching with cyanide ion.

Silver is later recovered by

- A. Distillation

B. Zone refining

C. Displacement with zinc

D. liquation

Answer: C



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16. Considering Ellingham diagram, which of the following metals can be used to reduce alumina ?

A. Fe

B. Cu

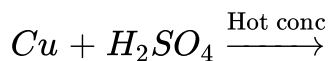
C. Mg

D. Zn

Answer: C

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17. Complete the following reactions .



- A. Liquation
- B. Van Arkel process
- C. Zone refining
- D. Mond's process

Answer: B

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18. Which of the following is used for concentrating ore in metallurgy ?

- A. Leaching
- B. Roasting
- C. Froth floatation
- D. Both (a) and (c)

Answer: D



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19. The incorrect statement among the following is

- A. Nickel is refined by Mond's process.
- B. Titanium is refined by Van Arkel's process
- C. Zinc blende is concentrated by froth floatation
- D. In the metallurgy of gold, the metal is leached with dilute sodium chloride solution.

Answer: D

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20. In the electrolytic refining of copper, which one of the following is used as anode ?

- A. Pure copper
- B. Impure copper
- C. Carbon rod
- D. Platinum electrode

Answer: B

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21. Which of the following plot gives Ellingham diagram ?

A. ΔS° vs T

B. ΔG° vs T

C. ΔG° vs $\frac{1}{T}$

D. ΔG° vs ST^2

Answer: B



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22. In the Ellingham diagram, for the formation of carbon monoxide

A. $\left(\frac{\Delta S^\circ}{\Delta T}\right)$ is negative

B. $\left(\frac{\Delta G^\circ}{\Delta T}\right)$ is positive

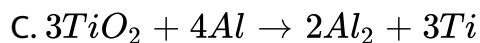
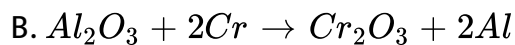
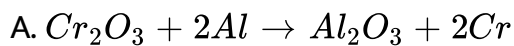
C. $\left(\frac{\Delta G^\circ}{\Delta T}\right)$ is negative

D. initially $\left(\frac{\Delta T}{\Delta G^\circ}\right)$ is positive, after 700°C , $\left(\frac{\Delta G^\circ}{\Delta T}\right)$ is negative

Answer: C

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23. Which of the following reduction is not thermodynamically feasible ?



D. none of these

Answer: B

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24. Which of the following is not true with respect to Ellingham diagram ?

- A. Free energy changes follow a straight line. Deviation occurs when there is a phase change.
- B. The graph for the formation of CO_2 is a straight line almost parallel to free energy axis.
- C. Negative slope of CO shows that it becomes more stable with increase in temperature.
- D. Positive slope of metal oxides shows that their stabilities decrease with increase in temperature.

Answer: B



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Answer The Following Questions

1. What is difference between minerals and ores ?

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2. What are the various steps involved in extraction of pure metals from their ores ?

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3. What is the role of Limestone in the extraction of Iron from its oxide Fe_2O_3 ?

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4. Which type of ores can be concentrated by froth floatation method? Give two examples for such ores.

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5. Out of coke and CO_2 which is better reducing agent for the reduction of ZnO ? Why ?

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6. Describe a method for refining nickel.

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7. Explain zone refining process with an example.

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8. Using the Ellingham diagram given below.

Predict the conditions under which

Aluminium might be expected to reduce magnesia.



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9. Using the Ellingham diagram given below.

Predict the conditions under which

Magnesium could reduce alumina



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10. Using the Ellingham diagram given below.

Carbon monoxide is more effective reducing agent than carbon

below 983 K but, above this temperature, the reverse is true -

Explain.

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11. Using the Ellingham diagram given below.

It is possible to reduce Fe_2O_3 by coke at a temperature around 1200 K.

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12. Give the uses of zinc.

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13. Explain the electrometallurgy of aluminium.

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14. Explain the following terms with suitable examples.

Gangue

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15. Explain the following terms with suitable examples.

slag

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16. Give the basic requirement for vapour phase refining.

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17. Describe the role of the following in the process mentioned.

Silica in the extraction of copper.

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18. Describe the role of the following in the process mentioned.

Cryolite in the extraction of aluminium.

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19. Describe the role of the following in the process mentioned.

Iodine in the refining of Zirconium.

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20. Describe the role of the following in the process mentioned.

Sodium cyanide in froth floatation.

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21. Explain the principle of electrolytic refining with an example.

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22. The selection of reducing agent depends on the thermodynamic factor : Explain with an example.

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23. Give the limitations of Ellingham diagram.

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24. Write a short note on electrochemical principles of metallurgy.

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Evaluate Yourself

1. Write the equation for the extraction of silver by leaching with sodium cyanide and show that the leaching process is a redox reaction.

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2. Magnesite (Magnesium carbonate) is calcined to obtain magnesia, which is used to make refractory bricks. Write the decomposition reaction.

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3. Using Ellingham diagram (fig) indicate the lowest temperature at which ZnO can be reduced to Zinc metal by carbon. Write the overall reduction reaction at this temperature.



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4. Metallic sodium is extracted by the electrolysis of brine (aq. NaCl). After electrolysis the electrolytic solution becomes basic in nature. Write the possible electrode reactions.

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[Additional Questions And Answers](#)

1. Which metal is used for extraction of *Au* and *Ag* and also for galvanisation of iron objects ?

A. Mg

B. Zn

C. Cr

D. Co

Answer: B

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2. Which of the following is not a mineral of aluminium ?

A. Bauxite

B. Cryolite

C. China clay

D. Malachite

Answer: D



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3. Which of the following is commonly used to produce foam in froth floatation process ?

A. Pine oil

B. Cresol

C. NaCN

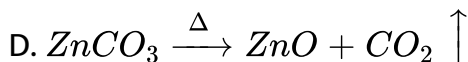
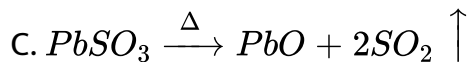
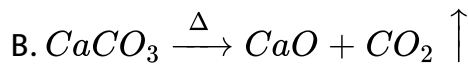
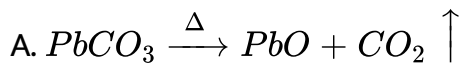
D. Xanthate

Answer: A



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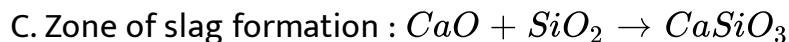
4. Among the following, one does not belong to calcination. Pick the odd one out.



Answer: C

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5. The iron formed in blast furnace is called



D. Zone of reduction : $Fe_2O_3 + 3C \rightarrow 3CO + 2Fe$

Answer: B

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6. Name the process that is employed to refine aluminium.

A. Vapour phase method

B. Electrolytic refining

C. Zone refining

D. Van-Arkel method

Answer: C

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7. Which of the following will give respective metal by self reduction ?

- A. Galena (PbS)
- B. HgS
- C. ZnS
- D. Both (a) & (b)

Answer: D

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

- A. Iron sulphide (FeS)
- B. Carbon monoxide (CO)

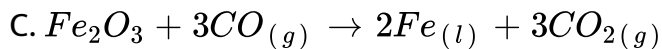
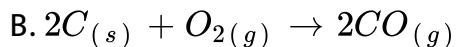
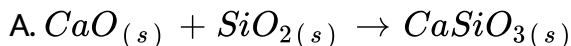
C. Copper (I) sulphide (Cu_2S)

D. Sulphur dioxide (SO_2)

Answer: C

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9. Which among the following reaction represents the formation of slag ?



Answer: A

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10. Which one of the following element is present as an impurity in pig iron ?

A. Phosphorus

B. Manganese

C. Carbon

D. Silicon

Answer: C



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11. Which of the following mineral contains calcium as well as magnesium ?

A. Zinc blende

B. Aragonite

C. Dolomite

D. Carnalite

Answer: C



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12. In the froth-floatation process the collectors such as pine oil and xanthates, etc enhance.

A. Non-wettability of the mineral particles in froth.

B. non-wettability of the mineral particles in water.

C. Non-wettability of the gangue particles in froth

D. Non-wettability of the gangue particles in water

Answer: B

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13. Concentration of copper pyrites is done by -

- A. leaching
- B. magnetic separation
- C. froth floatation
- D. hydraulic washing

Answer: C

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14. Identify the decreasing order of carbon content in different forms of iron.

- A. Wrought iron > Pig iron > castiron

B. Cast iron > Pig iron > Wrought iron

C. Pig iron > Cast iron > Wrought iron

D. Cast iron > Wrought iron > Pig iron

Answer: C

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15. What is the action of water on (a) sodium (b) magnesium, and (c) aluminium? Write equations of the chemical reaction involved.

A. electro metallurgy

B. pyro metallurgy

C. hydro metallurgy

D. smelting

Answer: A

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16. The blistered appearance of Cu obtained from the reverberatory furnace is due to evolution of

A. CO_2 gas

B. SO_2 gas

C. NO_2

D. Due to evaporation of volatile materials.

Answer: B

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17. Identify the halide ore among the following.

A. Epsom Salt

B. Pyrolusite

C. Anglesite

D. Rock Salt

Answer: D



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18. Identify the metal that occurs in free state.

A. Al

B. Au

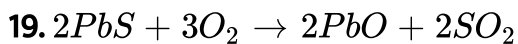
C. Mg

D. Ca

Answer: B



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Name the process.

- A. Roasting
- B. Calcination
- C. Smelting
- D. Leaching

Answer: A

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20. The process of heating of copper pyrites to remove sulphur is called

- A. froth flotation

B. roasting

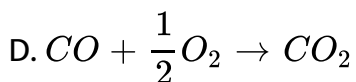
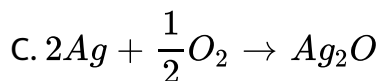
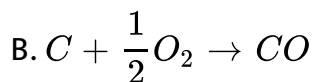
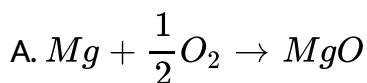
C. calcination

D. smelling

Answer: B

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21. ΔG° vs T plot in the Ellingham's diagram slopes downward the reaction



Answer: B

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22. Pick out the alloy that contains a non-metal as constituent in it

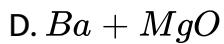
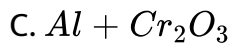
- A. Brass
- B. Bronze
- C. Steel
- D. Invar

Answer: C

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23. Ignition mixture used in aluminothermic process is

- A. $Cr + Al_2O_3$
- B. $Mg + BaO_2$

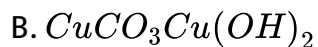
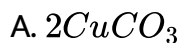


Answer: B

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Fill In The Blanks

1. Malachite has _____ composition.



Answer: B



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2. Zinc blende is _____.

A. ZnS

B. PbS

C. Ag_2S

D. Cu_2S

Answer: A



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3. In acid leaching process, the insoluble sulphide is converted into soluble sulphate and elemental _____.

A. carbon

B. lead

C. sulphur

D. zinc

Answer: C



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4. Sulphide ore is converted to oxide form by using the process

_____.

A. Calcination

B. Roasting

C. Smelting

D. Leaching

Answer: B

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5. Magnetic separation it is based on the difference in the _____ of the ore and the impurities.

- A. magnetic properties
- B. chemical properties
- C. physical properties
- D. melting point

Answer: A

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6. Zinc is extracted from Zinc blende by _____

- A. Carbon reduction process

B. Nitrogen reduction process

C. Oxygen reduction process

D. All of these

Answer: A

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7. $ZnS + 3O_2 \xrightarrow{\Delta} 2ZnO + 2SO_2 \uparrow$. The above equation is an example for _____.

A. calcination

B. reduction

C. roasting

D. leaching

Answer: C

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8. Gibb's free energy is given by _____.

A. $\Delta G^\circ = -nFE^\circ$

B. $\Delta G^\circ = nF$

C. $\Delta G^\circ = nFE^\circ$

D. $\Delta E^\circ = -nFG^\circ$

Answer: A

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9. $\text{Na}[\text{Al}(\text{CN})_2]$ is _____.

A. Sodium aurocyanide

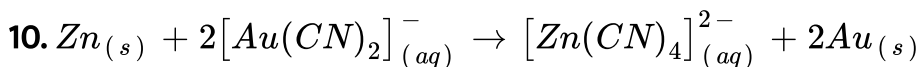
B. Sodium meta aluminate

C. Aluminosilicate

D. Sodium dicyano argentate

Answer: D

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In the above equation, the oxidation state of metallic gold is _____

A. 1

B. 0

C. +2

D. -2

Answer: B

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11. Semiconductors are purified by _____ method.

- A. Zone refining
- B. Electrolytic refining
- C. Mond's process
- D. Beisemerisation

Answer: A



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12. Magnesite is _____.

- A. Magnesium oxide
- B. Magnesium carbonate
- C. Magnesium sulphate

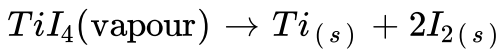
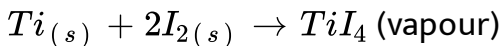
D. Magnesium chloride

Answer: B



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13. The following set of reaction is used for refining titanium. This method is known as _____



- A. Hall Herold process
- B. Mond process
- C. Van - Arkel process
- D. Alumino thermic process

Answer: C



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14. In the metallurgy of iron, limestone is added to coke. Which acts as a _____

- A. Reducing agent
- B. Oxidising agent
- C. Slag
- D. Flux

Answer: D



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15. A mixture containing sulphides of copper and iron is called __

- A. mineral

B. ore

C. matte

D. matrix

Answer: C



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16. Cinnabar is the sulphide ore of _____ metal.

A. Zn

B. Pb

C. Hg

D. Ag

Answer: C



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17. The percentage of carbon in high carbon steel is _____.

- A. 0.5 – 1 %
- B. 0.15 – 1.5 %
- C. 0.15 – 1.5 %
- D. 0.15 – 0.3 %

Answer: B



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18. Froth floatation process is suitable for concentrating ____ ores.

- A. oxide
- B. carbonate

C. sulphide

D. halide

Answer: C



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19. Steel is an alloy of _____

A. iron and carbon

B. iron and calcium

C. copper and carbon

D. copper and iron

Answer: A



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20. Metal oxide is converted into metal by the ____ process.

A. Calcination

B. roasting

C. Smelting

D. beesemerisation

Answer: C



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21. Sodium cyanide solution is used to extract _____ from its ores.

A. copper

B. silver

C. gold

D. both (b) and (c)

Answer: D

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22. In the thermite process _____ is used as a reducing agent.

A. Al

B. CO

C. C

D. CO_2

Answer: A

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23. Galena is _____

A. PbS

B. ZnS

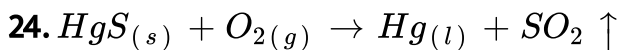
C. Ag_2S

D. FeS_2

Answer: A



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The above reaction is an example of _____ reduction.

A. metal

B. hydrogen

C. carbon

D. auto

Answer: D



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25. In Hall-Herold process, act as an anode.

A. Carbon blocks

B. hydrogen

C. copper rods

D. Zinc rods

Answer: A



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1. Assertion (A) : Aluminium is used in the design of chemical reactors, medical equipments, refrigeration units and gas pipelines.

Reason (R) : Aluminium show high resistance to corrosion.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: A



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2. Assertion (A) : Metallic zinc is used in galvanising metals such as iron and steel.

Reason (R) : Zinc is also used to produce die castings.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: B



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3. Assertion (A) : Zone refining is carried out in an inert gas atmosphere.

Reason : The metal is treated with a suitable reagent which can form a volatile compound with the metal.

A. Both (A) and (R) are true and (R) is the correct explanation of

(A).

B. Both (A) and (R) are true and (R) is not the correct

explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: D



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4. Assertion (A) : Cuprite is concentration by froth floatation process.

Reason (R) : Cuprite is the sulphide ore

A. Both (A) and (R) are true and (R) is the correct explanation of

(A).

B. Both (A) and (R) are true and (R) is not the correct

explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

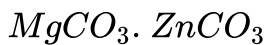
Answer: D



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5. Assertion (A) : Calamine and Dolomite are the Carbonate ores.

Reason (R) : Calamine is $ZnCO_3$ whereas dolomite is



- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: C

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6. Assertion (A) : Roasting process is involved in the metallurgy of Cu from malachite ore.

Reason (R) : Roasting is the process of heating the ore in the absence of air.

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: D

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7. Assertion (A) : Metallurgy of Ag from argentite is known as hydrometallurgy.

Reason (R) : Argentite is Ag_2S .

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: B



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8. Assertion : In the manufacturing of iron from hematite, silicon dioxide is added as flux.

Reason : Lime stone is used as acidic flux in many case.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: D

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9. Assertion : Wrought iron is purest form of iron with respect to other forms.

Reason : It has less than 0.5% carbon.

A. Both (A) and (R) are true and (R) is the correct explanation of

(A).

B. Both (A) and (R) are true and (R) is not the correct

explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: A

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10. Assertion : Aluminium metal is used as a reducing agent for the extraction of metals.

Reason : Aluminium has great affinity for oxygen.

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: A

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11. Assertion : Carbon is used in blast furnace for reduction of Fe_2O_3 .

Reason : The gangue present is silica which is acidic in nature.

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: B



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12. Assertion : Ti can be purified by van arkel process

Reason : TiI_4 is a volatile compound which decomposes at a high temperature.

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: A



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13. Assertion : Aluminothermic process is the extraction of chromium from chromic oxide.

Reason : Alumina has a high melting point.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: B



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14. Assertion : A dilute solution of NaCN is used for leaching ores of silver and gold.

Reason : Impurities present in these ores dissolve in NaCN

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: C



View Text Solution

15. Assertion : Carbonate and sulphate are concentrated by froth floatation process

Reason : Pine oil wets the gangue particle

- A. Both (A) and (R) are true and (R) is the correct explanation of (A).
- B. Both (A) and (R) are true and (R) is not the correct explanation of (A).
- C. (A) true but (R) false.
- D. Both (A) and (R) are false.

Answer: D



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16. Assertion : Galvanising is the process of coating iron and steel with metallic zinc.

Reason : Highly resistant to rusting and corrosion.

A. Both (A) and (R) are true and (R) is the correct explanation of (A).

B. Both (A) and (R) are true and (R) is not the correct explanation of (A).

C. (A) true but (R) false.

D. Both (A) and (R) are false.

Answer: A



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Correct Statements S

1. Identify the true statements from the following: I. All ores are minerals

II. All minerals are not ores.

III. Aluminium can be extracted from bauxite.

IV. Aluminium can be extracted from china clay.

A. Only I

B. Only II

C. III & IV

D. I, II & III

Answer: D



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2. I. Copper is the first metal used by the human

II. Aluminium is used in galvanising metals

III. Aluminium is a good conductor of electricity

IV. Magnets can be made from iron.

A. Only I

B. Only II

C. I, III & IV

D. III & IV

Answer: C



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3. I. Ellingham diagram helps to select a suitable reducing agent

II. Magnesite is calcinated to obtain magnesia

III. Calcination is a process of cooling substances.

IV. Sulphur dioxide is harmful to the environment.

A. I, II & IV

B. Only II

C. Only I

D. III & IV

Answer: A



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4. I. Froth flotation is used to concentrate sulphide ores.

II. Magnetic separation is applicable for ferromagnetic ores.

III. Roasting method used to convert sulphide ores to oxides.

IV. Magnetic separation is used to concentrate heavy oxide ores.

A. III & IV

B. Only II

C. Only I

D. I, II & IV

Answer: D

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5. I. Ores are associated with non-metallic impurities

II. Ores are associated with rocky materials.

III. Removal of impurities is known as concentration of ore.

IV. Ellingham diagram shows the stability of different metal oxides.

A. I, II, III & IV

B. Only II

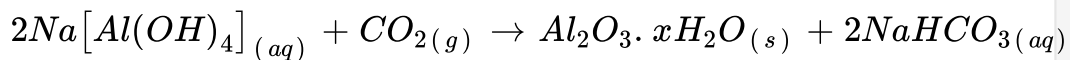
C. Only I

D. III & IV

Answer: A

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6. Identify the correct statement (s) with respect to the following reaction.



(i) CO_2 is acting as a reducing agent.

(ii) The solution is neutralised by passing CO_2 gas to form hydrates Al_2O_3 precipitate.

(iii) Insoluble sulphate is converted into soluble sulphate.

(iv). The precipitate is filtered off and heated around 1670 K to get pure Alumina.

A. only ii

B. Only (iv)

C. both (ii) & (iv)

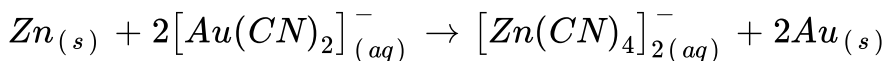
D. both (i) and (iii)

Answer: C



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7. Identify the correct statement with respect to the following reaction.



- (a) The above reaction takes place in extraction of zinc
- (b) Gold is reduced to its elemental state
- (c) The process is called ammonia leaching.
- (d) The above reaction is an example of cyanide leaching.

A. III & IV

B. II & IV

C. Only I

D. I, II, III & IV

Answer: B



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1. About "Electrolytic refining"

- A. The crude metal is refining by electrolysis
- B. The rods of impure metal are used as cathode
- C. Thin strips of pue metal are used as cathode.
- D. Less electropositive impurities removed as anode mud.

Answer: B



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2. About "Van-Arkel"

- A. Van-Arkel method used for refining Zirconium.
- B. Aluminium is a bad conductor of heat.

C. Aluminium shows high resistance to corrosion.

D. Aluminium is a good conductor of heat

Answer: B

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3. Incorrect Statement (S) :

A. Aluminium is used to produce die-castings.

B. Gold nanoparticles used as an catalysts

C. Copper is the first metal used by the human

D. Brass is an alloy of zinc and copper

Answer: A

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4. Incorrect Statement (S) :

- A. Germanium is used as an semi conductor
- B. Stainless steel is an important alloy of Aluminium
- C. Zinc sulphide is used in making luminous paints
- D. Brass an alloy of zinc is used in water valves.

Answer: B



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5. Incorrect Statement (S) :

- A. Metallic oxides can be reduced by an alumino thermitc process
- B. Flux + gangue \rightarrow slag
- C. Silica gangue present in the ore is basic in nature

D. $Cu_2S + FeS \rightarrow$ Copper matter

Answer: C

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6. Incorrect Statement (S) :

- A. During roasting volatile impurities are oxidised.
- B. Smelting is a reduction process.
- C. Malachite ore is concentrate by magnetic separation.
- D. Horn silver is AgCl

Answer: C

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1. Define metallurgy.

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2. Why should we have a ecofriendly metallurgical process?

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3. Name some elements that occur as native elements.

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4. What is meant by concentration?

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5. Can the same method of extraction be used for all metals.

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6. Name some common methods of the ore concentration.

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7. Name the two steps involved the extraction of crude metal.

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8. Name some reducing agents used to convert metal oxides to metal.

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9. Name the metals that are obtained from their oxides using hydrogen as reducing agent.

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10. Name the various refining process.

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11. Discuss the use of an acidic flux in metallurgy.

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12. Why are sulphide ores converted to oxide form before reduction to metal?

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13. Discuss the process of roasting with suitable example.

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14. Write the two similarities between calcination and roasting.

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15. Name the ore that can be concentrated by magnetic separation method.

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16. Why is the froth floatation method selected for the concentration of sulphide ores?

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17. What is Ellingham diagram?

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18. What does Ellingham diagram represent?

 [View Text Solution](#)

19. Name some depressing agents.

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20. What are the various leaching processes?

 [View Text Solution](#)

21. What is leaching?

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22. What is distillation?

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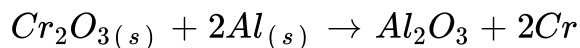
23. What is the role of silica in the extraction of copper?

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24. Describe the role of SiO_2 in the extraction of Cu from Copper matte.

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25. The reaction,



$\Delta G^\circ = -421kJ$ is thermodynamically feasible why does it not take place at room temperature?

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26. What is the role of graphite rods in the electro metallurgy of aluminium?

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27. Write the chemical reactions involved the extraction of gold by cyanide process. Also give the role of zinc in the extraction.

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28. Name and discuss the principle involved in obtaining silicon of high purity.

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29. List out the commercial uses of iron.

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30. Give reason : Extraction of copper directly from sulphide ores is less favourable than that from its oxide ores through reduction.

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31. What are the different methods of concentration of ores?



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32. Define metallurgy.

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33. What is calcination ? Give example.

 [Watch Video Solution](#)

34. Define roasting.

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Short Answer Type

1. What is gravity separation ?

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2. Explain hydraulic lift and hydraulic brakes.

 [Watch Video Solution](#)

3. What is cyanide leaching ? Give an example.

 [Watch Video Solution](#)

4. What is cementation ?

 [Watch Video Solution](#)

5. What is meant by ammonia leaching ?

 [Watch Video Solution](#)

6. Explain alkali leaching in the extraction of aluminium.

 [Watch Video Solution](#)

7. How is acid leaching done for the sulphide ores ?

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8. Before reduction, the ore is first converted into the oxide of metal of interest. Give reason.

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9. Discuss the process of roasting with suitable example.

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10. What is calcination ? Give example.

 [Watch Video Solution](#)

11. What is vapour phase method ?

 [Watch Video Solution](#)

12. Distinguish Roasting and Calcination.

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13. Write the complete set of reactions occurring in the zone of reduction in the blast furnace in the metallurgy of iron.

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14. What is the role of depressants in froth floatation process ?

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15. Define the term slag.

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16. Write the molecular composition of the following ores and mention their metal magnitude, calamine and bauxite.

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17. What is coupling of reaction ? How is it useful in metallurgy ?

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18. Explain how the metal oxide is converted into metal using carbon as a reducing agent.

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19. How oxides of metals are reduced by hydrogen ?

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20. What is meant by aluminothermitc process ?

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21. AUTO REDUCTION

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22. What is liquation ?

 [Watch Video Solution](#)

23. Mention the uses of copper.

 [Watch Video Solution](#)

24. List the applications of gold.

 [Watch Video Solution](#)

25. What is Misawite? Give its composition.

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26. Write the chemical composition of the following alloys and give any one of its applications

(i) Bronze

(ii) Brass

(iii) Stainless steel

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27. Copper and silver lie low in the electrochemical series and yet they are found in the combined state as sulphides in nature. Comment.

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28. Support the statement given below with relevant examples.

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29. Why is zinc not extracted from zinc oxide through reducing using CO ?

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30. Which of the following metal can not be extracted by smelting process

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31. Which one is good reducing agent (C or CO) for Fe_2O_3 , below 1073 K ?

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32. What are the applications of the Ellingham diagram ?

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Long Answers

1. Explain froth floatation, with diagram.

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2. Explain concentration by magnetic separation with diagram.

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3. In the extraction of copper, explain the smelting process.

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4. Explain refining of nickel by mond's process.

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5. Explain refining of titanium by Van-Arkel method.

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6. List out the application of aluminium.

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7. List of applications of iron.

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8. How can you separate alumina from silica in a bauxite ore.

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9. Write short note on the following :

The process in which no external reducing agent is used.

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10. Write short note on the following :

The process which is used for highly electro positive metal.



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11. Write short note on the following :

Write the equation involved in the termite process.



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12. What is zone refining ? Describe the principle involved in the purification of the metal by this method.



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Unite Test I Choose The Correct Answer

1. The chemical name of Horn silver is ____.

A. Chlorargyrite

B. Silver glance

C. Prousitite

D. Pyrargyrite

Answer: A



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2. During the cyanide leaching of gold, the insoluble gangue formed is

A. gold cyanide

B. aluminosilicate

C. gold silicate

D. gold aluminosilicate

Answer: B

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3. The metal oxide which cannot be reduced to metal by carbon is

A. PbO

B. Al_2O_3

C. ZnO

D. FeO

Answer: B

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4. Removal of unreacted oxide ore, other metals, non metals associated with isolated crude metal is called _____

- A. leaching
- B. bleaching
- C. refining
- D. liquation

Answer: C



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5. Match the following Metal with their Melting points.



- A. 1-d, 2-c, 3-b, 4-a
- B. 1-a, 2-b, 3-c, 4-d
- C. 1-b, 2-c, 3-a, 4-d
- D. 1-c, 2-b, 3-a, 4-d

Answer: A

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Unite Test Iv Long Answer

1. Give the limitations of Ellingham diagram.

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