CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

METALLURGY

Textbook Evaluation Choose The Correct Answer

1. Bauxite has the composition

A. Al_2O_3

B. $Al_2O_3.nH_2O$

C. $Fe_2O_32H_2O$

D. none of these

Answer: B

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2. Roasting os 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 ?

A. $2Zn + O_2 \rightarrow 2ZnO$

B. $2ZnS + 3O_2 \rightarrow 2ZnO + 2SO_2$

C. $MgCO_3 \rightarrow MgO + CO_2$

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 agenets for metal sulphides.

Answer: D

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7. Match item is column -I with items of column -II and assign the correct code:

Column-I	Column-II
A Cyanide process	(*i*) Ultrapure Ge
B Froth floatation process	(*ii*) Dressing of ZnS
C Electrolytic reduction	(*iii*) Extraction of Al
D Zone refining	(*iv*) Extraction of Au

A. $\begin{matrix} A & B & C & D \\ \text{(i)} & \text{(ii)} & \text{(iii)} & \text{(iv)} \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ \text{(iii)} & \text{(iv)} & \text{(v)} & \text{(i)} \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ \text{(iv)} & \text{(ii)} & \text{(iii)} & \text{(i)} \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ \text{(ii)} & \text{(iii)} & \text{(i)} & \text{(v)} \end{matrix}$

Answer: C

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

A. Smelting

B. Calcination

C. Roasting

D. Electomagneti separation

Answer: D

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9. Which one of the following is not feasible?

A.

$$Zn(s) + CU^{2+}(aq) \rightarrow Cu(s) + Zn^{2+}(aq)$$

B.

$$Cu(S) + Zn^{2+}(aq) \rightarrow Zn(s) + Cu^{2+}(aq)$$

C.

$$Cu(s) + 2Ag^{+}(ag) \rightarrow Ag(s) + Cu^{2+}(ag)$$

D.

$$Fe(S) + Cu^{2+}(aq) \rightarrow Cu(s) + fe^{2+}(aq)$$

Answer: B

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10. Electrochemical process is used to extract

A. Iron

B. Lead

C. Sodium

D. Silver

Answer: C

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

A. Magnetic

B. Hematite

C. Galena

D. Cassiterite

Answer: C

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13. 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. Decrease the electrical conductivity

D. Increase the rate of reduction

Answer: A

14. 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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15. Cupellation is a process used for the refining of

A. Silver

B. Lead

C. Copper

D. Iron

Answer: A

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16. 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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17. 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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18. The following set of reactions are used in refining Ziconium

Zr (impure)+$2l_2 \overset{523\mathrm{K}}{Z} rl_4$

$Zel_4 \overset{1800K}{\underset{}{Z}} r(pure) + 2l_2$ this method is known as.....

A. Liquation

B. Van Arkel process

C. Zone refining

D. Mond's process

Answer: B

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19. 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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20. The incorrect statement among the following is

A. Nickel is refined by Van 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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21. 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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22. Which of the following plot gives Ellingham diagram?

A. ΔS Vs T

B. $\Delta^{\circ} VsT$

C. $\Delta G^{\circ} Vs\frac{1}{T}$

D. $\Delta G^{\circ} VsT^{2}$

Answer: B

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

Answer: C

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

A. $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$

B. $Al_2O_32Cr \rightarrow Cr_2O_3 + 2Al$

C. $3TiO_2 + 4Al \rightarrow 2Al_2O_3 + 3Ti$

D. None of these

Answer: B

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

A. Free emergy 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 enery axis.

C. Negative slope of CO shows that it becomes more stable with increase in temprature.

D. Positive slopw of metal oxides shows that their stabilities decrease with increase on temprature.

Answer: B

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Textbook Evaluation 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, 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 using the Elligham diagram fiven

below.

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8. Predict the conditions under which

(a)Aluminium might be expected to reduce magnesia

(b)Magnesium could reduce alumina.

(ii)Carbon monoxide is more effective reducing agent than carbon below 983 K but, above this temprature,the reverse is true -Explain.

(iii)it is possible to reduce Fe_2O_3 by coke at a temprature around 1200 K.

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9. Give the uses of zinc.

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10. Explain the electrometallurgy of aluminium.

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11. Explain the following terms with suitable examples.

(i)Gangue (ii)Slag

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12. Give the basic requirement for vapour phase refining.

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13. Describe the role of the following in the process metioned.

(i)Silica in the extraction of copper.

(ii)Cryolite in the extraction of aluminium.

(iii)Iodine in the refining of Ziroconium.

(iv)Sodium cyanide in froth floatation.

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

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

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16. Give the limitations of Ellingham diagram.

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17. 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 proces 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 indicate the lowest temprature at which ZnO can be reduced to

zinc metal by carbon.Write the overall reduction reaction at this temprature.

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

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Additional Questions Choose The Best Answer

1. Choose the best answer.

A. Fe_2O_3

B. $Fe_2O_3 . FeO$

C. $Al_2O_3 . H_2O$

D. $Al_2O_3 . 2H_2O$

Answer: D

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2. Froth floatation process involves the.....

A. Treatment of the ore with water and pine oil

B. Washing of the ore with a steam of water

C. Owing off the ore over a conveyor belt rolling over magnetic roller

D. melting of ore

Answer: A

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3. In the froth floatation process for the purification of ores the particles float because.....

A. They are light

B. Their surface is not easil wetted by water

C. they bear electrostatic charge

D. they are insoluble

Answer: B

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4. In a metallurgical process ,an acid flux is used for removing.....

A. Slag

B. Basic flux

C. Acidic gangue

D. Basic gangue

Answer: D

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5. The process of the removal of impurities from a crude metal is called.....

A. Concentration

B. Calcination

C. Refining

D. Roasting

Answer: C

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6. Which of the following metal is obtained by self reduction method?

A. Fe

B. Cu

C. Ag

D. Mg

Answer: B

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7. Which one of the following ore is best concentrated by froth floatation method?

A. Magnetite

B. Malachite

C. Galena

D. Haematite

Answer: C

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8. Heating mixture of Cu_2O and Cu_2S will give.....

A. $Cu + SO_2$

B. $Cu + SO_3$

C. CuO+CuS

D. Cu_2SO_3

Answer: A

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9. Which of the following pairs of metals is puridied by Van-Arkel method?

A. Ag and Au

B. Ni and Fe

C. Ga and In

D. Zr and Ti

Answer: D

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10. Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of .....

A. $Al_2O_3 + KF + Na_3AlF_6$

B. $Al_2O_3 + HF + NaAlF_4$

C. $Al_2O_3 + HF + NaAlF_4$

D. $Al_2O_3 + Na_3AlF_6 + CaF_2$

Answer: D

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11. The ore which contains both copper and iron....

A. Cuprite

B. Haematite

C. Copper pyrite

D. Malachite

Answer: C

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12. Match the etraction processes listed in column-I with metals listed in column-II

Column-I	Column-II
A. Self reduction	1. Pb
B. Carbon reduction	2. Ag
C. Complex formation	3. Cu
D. Decomposition of Iodine	4. B

A. $A-2, B-1, C-4, D-3$

B. A-3,B-4,C-1,D-2

C. A-3,B-1,C-2,D-4

D. A-4,B-2,C-1,D-3

Answer: C

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13. The chief ore of Aluminium is _____

A. Bauxite

B. Clay

C. Haematite

D. Magnetite

Answer: A

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14. Which one of the following metal having least chemical reactive?

A. Na

B. Mg

C. Al

D. Au

Answer: D

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15. Pick out the more reactive metal

A. Cu

B. Ag

C. Au

D. Na

Answer: D

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16. Consider the following statements.

(i)All ores ar minerals but all minerals are not ores.

(ii) bauxite is an ore of aluminium while clay is not.

(iii) Extraction of aluminium from clay is profitable one.

A. (i)Only

B. (ii)Only

C. (iii)Only

D. (i),(ii) and (iii)

Answer: C

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17. Match the List-I and List-II correctly using the code given below.

List-I	List-II
A. Zinc blende	1. $Fe_2O_3 . 3H_2O$
B. Iron pyrite	2. $2CuCO_3.Cu(OH)_2$
C. Azurite	3. ZnS
D. Limonite	4. FeS_2

A. A,B,C,D
1,2,3.4

B. A,B,C,D
2,3,4,1

C. $\begin{matrix} A,B,C,D \\ 3,4,2,1 \end{matrix}$

D. $\begin{matrix} A,B,C,D \\ 3,4,2,1 \end{matrix}$

Answer: C

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18. The impurities associated with ores is.....

A. Flux

B. Slag

C. Gangue

D. Metal

Answer: C

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19. Oxide ores are concentrated by.....

A. Hand picking

B. hydraulic washing

C. froth floatation process

D. Magnetic sepration process

Answer: B

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20. Heaematite and tin stone are purified by .....

A. Gravity separation process

B. Magnetic separation process

C. Froth floatation process

D. Hand picking

Answer: A

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21. Froth flotation process is suitable for concentrating ..... ores.

A. Oxide ores

B. Carbonate ores

C. Chloride ores

D. Sulphide ores

Answer: D

22. Copper pyrite and zinc blende are purified by.....

A. Gravity separation process

B. Froth floatation process

C. Hand picking

D. None of the above

Answer: B

23. Frothing agents used to separate ZnS from PbS is.....

A. NaCN

B. NaCl

C. $NaNO_3$

D. $NaNO_2$

Answer: A

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24. Depressing agents used to separate ZnS from PbS is .....

A. NaCN

B. NaCl

C. $NaNO_3$

D. $NaNO_2$

Answer: A

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25. Leaching is also called as.....

A. Hand picking

B. Electrolysis

C. Chemical process

D. Magnetic separation process

Answer: C

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26. In the leaching process ,the metal present in the ore is converted into.....

A. Soluble salt

B. Soluble complex

C. Insoluble complex

D. both (a) and (b)

Answer:

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27. Gold ore is concentrated by.....

A. Cyanide leaching

B. Alkali leaching

C. Acid leaching

D. Hand picking

Answer: A

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28. Bauxite is purified by.....

A. Cyanide leaching

B. Alkali leaching

C. Acid leaching

D. Hand picking

Answer: A

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29. Which type of leaching process convert insoluble sulphide ores into soluble sulphates?

A. Cyanide leaching

B. Alkali leaching

C. Acid leaching

D. Hand picking

Answer: C

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30. A chemist involves mining process and he got two ores together .If one is tinstone and another one is chromite,which type of process will be used to separate that two ores?

A. Leaching process

B. Froth floatation process

C. Zone refining process

D. Magnetic separation process

Answer: D

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31. The process in which the concentrated ore is strongly heated in the absence of air is called as.....

A. Roasting

B. Calcination

C. Smelting

D. Leaching

Answer: B

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32. A chemical substance that forms an easily fusible slag with gangue is called as...

A. Flux

B. Pure metal

C. Ore

D. impure metal

Answer: A

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33. Blistered copper is.....

A. 98% pure copper

B. 96% pure coppr

C. 97% pure copper

D. 88% pure copper

Answer: A

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34. Ignition mixture used in aluminothermic process is .....

A. $Mg + BaO_2$

B. MgO+BaO

C. $Al_2O_3 + Mg$

D. $Al_2O_3 + BaO_2$

Answer: A

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35. For spontaneous reaction ,the change in free energy should be...

A. positive

B. Negative

C. Zero

D. Neutral

Answer: B

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36. The change in Gibbs free energy for a reaction is expanded by.....

A. $\Delta G = \Delta H + T\Delta S$

B. $\Delta G = \Delta H - TS$

C. G-H-TS

D. $\Delta G = \Delta H - T\Delta S$

Answer: D

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37. Relationship between ΔG° and K_P is.....

A. ΔG° =RT In K_P

B. ΔG° =-Rin K_p

C. ΔG° =-T In K_P

D. ΔG° =-RT In K_P

Answer: A

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38. Consider the following statements.

(i)Ellingham drawn on a plot by considering the temprature in the x-axis and the standard free enery change for the formation of metal oxide in y-axis

(ii) The resultant plot is straight line.

(iii)In the Ellingham diagram.ΔH as slope and ΔS as y-intercept.

which of the above statement is/are not correct?

A. (i) and (ii)

B. (ii) and (iii)

C. (ii) only

D. (iii)Only

Answer: D

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39. Which of the following oxides is unstable at moderate temperature?

A. Al_2O_3

B. Cr_2O_3

C. MgO

D. HgO

Answer: D

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40. The oxides will decompose on heating even in the absence of reducing agent is .....

A. Ag_2O

B. HgO

C. MgO

D. Both (a) and (b)

Answer: D

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41. consider the following statements

(i)Ellingham diagram gives information about the thermodynamic feasibility of a reaction.

(ii)It explains the rate of the reaction.

(iii)Below 1000 K temprature ,FeO is more stable than CO

Which of the above statement (s) is /are not correct?

A. (i) and (ii)

B. (ii)and (iii)

C. (iii) only

D. (ii) Only

Answer: D

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42. Gibbs free energy change for the electrolysis process is expressed by ..... .

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

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

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

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

Answer: A

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43. The technique used to refining zinc and mercury is .....

A. Liquation

B. Distillation

C. Zone refining

D. Van-Arkel method

Answer: B

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44. Which of the following is not purified by zone refining process?

A. Ge

B. Si

C. Ga

D. Al

Answer: D

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45. Nickel is purified by....

A. Mond process

B. Van-Arkel method

C. Zone refining

D. Electrolytic refining

Answer: A

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46. Titanium is purified by .....

A. Mond process

B. Van-Arkel Method

C. Zone refining

D. Electrolytic refining

Answer: B

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47. The metal used for galvanisation of iron is ....

A. Al

B. Zn

C. Cu

D. Au

Answer: B

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48. Which metal alloy is used in design of aeroplane parts?

A. Al

B. Zn

C. Cu

D. Au

Answer: A

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49. Which metal is used for making coins and ornaments along with gold and other metals?

A. Zn

B. Al

C. Cu

D. Fe

Answer: C

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Additional Questions Fill In The Blanks

1. Minerals that contains a high percentage of metal from which it can be extracted are called.....

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2. .....helps us to select a suitable reducing agent and appropriate temrature range for reduction

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3. If E° is positive ,then the ΔG is.....

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4. Chemical formula of cuprite is.....

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5. Gravity separation is also called as.....

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6. .....ore is purified by gravity separation process.

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7. In froth floatation process.....acts as a collector

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8. Sodium cyanide is added to depresses the floatation property of ZnS by forming a layer

of .....

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9. The process of gold reduced to its elemental state is called .....

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10. Leaching process is a.....reaction

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11. Magnesite is calcined to give .....

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12. A chemical substance that forms an easily fusible slag with gangue is called as...

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13. In the extraction of iron .....is removed as slag.

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14. In the extraction of copper.....is removed as slag

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15. Cr_2O_3 can be reduced by an.....process

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16. .....is used as a reducing agent for the reduction of chromic oxide

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17. ..... is purified by zone refining

A. Ge

B. Cu

C. Fe

D. Zn

Answer:

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18. In the mond process,impure nickel is heated with .....compound.

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19. .....filament is used to decompose titanium tetraiodide

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20. .....is the most abundant metal.


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21. .....is used in packing materials for food items.


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22. .....is used in the making item of machine

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23. .....is used in the manufature of paints ruber and cosmetics.

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24. .....is the first metal used by the humans

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25. ..... Is used for increasing the efficiency of solar cells and also used as catalysts.

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26. .....ore is concentrated by froth floatation process.

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27. Zinc blende is concentrated by..... Process

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28. Gold ore is leached by adding of .....

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Additional Questions Match The Following

1. Match the following columns

(*i*) Haematite	(*a*) Fe_3O_4
(*ii*) Siderite	(*b*) Fe_2O_3
(*iii*) Iron pyrite	(*c*) $FeCO_3$
(*iv*) Magnetite	(*d*) FeS_2

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2. Match the following columns

(*i*) Copper glance	(*a*) $CuCO_3 . Cu(OH)_2$
(*ii*) Malachite	(*b*) Cu_2S
(*iii*) Copper pyrite	(*c*) $2CuCO_3 . Cu(OH)_2$
(*iv*) Azurite	(*d*) $CuFeS_2$

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3.

(*i*) Zinc blende	(*a*) $Al_2O_3 . 2H_2O$
(*ii*) Bauxite	(*b*) $ZnCO_3$
(*iii*) Zincite	(*c*) ZnS
(*iv*) Calamine	(*d*) ZnO

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4. Match the following columns

(*i*) Tin stone	(*a*) AgCl
(*ii*) Argentite	(*b*) Ag_3SbS_3
(*iii*) Ruby silver	(*c*) Ag_2S
(*iv*) Horn silver	(*d*) SnO_2

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5.

(*i*) Oxide ore	(*a*) Zinc blende
(*ii*) Carbonate ore	(*b*) Horn silver
(*iii*) Sulphide ore	(*c*) Haematite
(*iv*) Chloride ore	(*d*) Calamine

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6. Match the following columns

(*i*) Tin stone	(*a*) Magnetic separation process
(*ii*) Copper pyrite	(*b*) Leaching process
(*iii*) Bauxite	(*c*) Froth floatation process
(*iv*) Chromite	(*d*) Hydraulic washing process

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(*i*) Aluminium	(*a*) cosmetics
(*ii*) Zinc oxide	(*b*) gas pipelines
(*iii*) Iron	(*c*) making coins
7. (*iv*) Copper	(*d*) bicycle chains

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8. Match the following columns

(*i*) Gold nanoparticle	(*a*) Galvanising metals
(*ii*) Cast iron	(*b*) Cooking vessels
(*iii*) Metallic zinc	(*c*) Solar cells
(*iv*) Aluminium	(*d*) Pump stoves

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Additional Questions Assertion And Reasons

1. Assertion (A):Clay is an ore of aluminium while bauxite is not.

(R): Aluminium can be economically extracted from bauxite not from clay.

A. A and R are correct R explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: d

2. Assertion (A):Sulphide ores are concentrated by forth floatation process .

Reason ®:Sulphide ores are preferentially wetted by oil can be separated from gangue.

A. A and R are correct mR explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: a

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3. Assertion (A): Sulphide ore are concentrated by forth floatation process.

Reason (R):Sulphide ores are preferentialy wetted by oil can be separated from gangue.

A. A and R are correct mR explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: a

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4. Assertion (A):A suitable reducing agent is selected based on the thermdynamic consideration.

Reason (R):The reduction of metal oxide with a given reducing agent can occur if the free energy change fot the coupled reaction is positive.

A. A and R are correct mR explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: c

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5. Assertion (A): Aluminium can be used as a reducing agent for the reduction of chromic oxide.

Reason(R):In the Elligham diagram ,formation of chromium oxide lies diagram,formation of chromium oxide lies above that of the aluminium,therefore Al_2O_3 is more stable than Cr_2O_3

A. A and R are correct mR explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: a

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6. Assertion (A):Zone refining is based on the priniciple of fractional crystallisation

Reason (R):This process is carried out in an inert gas temprature.

A. A and R are correct R explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: b

7. Assertion (A):Aluminium is used in the design of chemical reactors.

Reason (R):Aluminium has high resistance to corrosion

A. A and R are correct R explain A

B. A and R are correct,R does not explains A

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: a

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Additional Questions Find The Odd One Out And Give The Reasons

1. Find the odd one out and give the reasons

(a)Nickel (b)Silicon

(c)Germanium (d)Galium

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2. Find the odd one out and give the reasons

(a)Copper (b)Zinc

(c)Silver (d)Galium

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3. Find the odd one out and give the reasons

(a)$\Delta G = -Ve$ (b)$\Delta H = -Ve$

(c)$\Delta S = +Ve$ (d)$\Delta S = -Ve$

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4. Find the odd one out and give the reasons

(a)Haematite (b)Siderite

(c)Limonite (d)Azurite

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5. Find the odd one out and give the reasons

(a)Copper glance (b)Zinc blende

(c)Argentite (d)Magnetite

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6. Find the odd one out and give the reasons

(a)Silver (b)Gold

(c)Sodium (d)Platinum

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Additional Questions Find Out The Correct Pair

1. (a)Metallurgy-Extraction of metals

(b)Clay-Ore of Al

(C)Na-Native element

(d)Ore-Gangue

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2. Find out the correct pair:

(a)Bauxite-Iron

(b)Siderite-Aluminium

(c)Malachite-Copper

(d)Argentite-Gold

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3. Find out the correct pair

(a)Limonite-Sulphide ore

(b)Cuprite-Oxide ore

(c)Calamine-Sulphide ore

(d)Horn silver-Oxide ore

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4. Find out the correct pair

(a)Oxide ore-Froth floatation process

(b)Sulphide ore-Gravity separation process

(c)Gold ore-Leaching method

(d)Oxides ore-Magnetic separation

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5. Find out the correct pair

(a)Aluminium-Galvanising metals

(b)Zinc-Cooking vessels

(c)Iron-Cutlery

(d)Copper-Dental fillings

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Additional Questions Find Out The Incorect Pair

1. (a)Copper-Least reactive

(b)Clay-Mineral of Al

(c)bauxite-Mineral of Al

(d)Gangue-Impurity

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2. Find out the incorrect pair

(a)Aluminium-Corundum

(b)Limonite-Iron

(c)Galena-Lead

(d)Tin-Siderite

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3. Find out the incorrect pair

(a)Magnetite-Fe_3O_4

(b)Malachite-$CuCO_3.\ Cu(OH)_2$

(c)Horn silver-Ag_2S

(d)Stefinite-Ag_2SbS_4

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4. Find out the incorrect pair

(a)Tin stone-Oxides ore

(b)Copper pyrite-Oxide ore

(c)Zincite-Oxide ore

(d)bauxite-Oxides ore

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5. Find out the incorrect pair

(a)Haematite-Gravity separation process

(b)Copper pyrite-Froth floatation

(c)Bauxite-Leaching process

(d)Pyrolusite-Magnetic separation process

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6. Find out the incorrect pair

(a)Gold ore-Cyanide leaching

(b)Nickel ore-Ammonia leaching

(c)Aluminium ore-Alkali leaching

(d)silver ore-Acid leaching

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7. Find out the incorrect pair

(a)Aluminium-design of aeroplane

(b)Zinc oxide-Cosmetics

(c)Zinc sulphide-X-ray screens

(d)Iron-Artificial limb joints

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Additional Questions 2 Mark Questions Answer The Following

1. Define Metallurgy

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2. What are minerals?

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3. What are ores?

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4. Write down the steps involved in a metallurgical process.

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5. What is Gangue ?

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6. Give the depressing agents used in the froth flotation process and why we use depressing

agents in that process?

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7. What is leaching?

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8. Explain Cyanide leaching.

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9. What is cementation ?

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10. What is meant by ammonia leaching ?

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11. What is Acid leaching?

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12. What is roasting?

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13. Calcination

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14. How will you manage sulphur dioxide produced during roasting process?

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15. What is smelting?

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16. Explain Auto reduction.

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17. What is Ellinghanb diagram?

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18. CO is more stable at higher temprature .Why?

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19. Ag_2O and HgO are unstable at moderate temprature and they will decompose on heating even in the absence of reducing agent .Why?

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20. What is refining process?

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21. List -out the common refining methods.

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22. Explain Distillation process with suitable example.

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23. Write the application of copper.

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24. Why aluminium cannot be extracted by reducing alumina with carbon?

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25. Write the names of two ores of copper.

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26. Explain the role of carbon monoxide in the purification of nickel?

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27. ZnO can be reduced to the metal by heating with carbon but not Cr_2O_3. Justify your answer.

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28. Name the method used for the refining of

(i) Nickel (ii) Zirconium

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29. Give one example for (i)Acidic flux (ii)basic

flux

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

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Additional Questions 3 Mark Questions Answer The Following Questions

1. All ores are minerals , but all minerals cannot be called as ores ,

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2. Bauxite is an ore of aluminium while china clay is not .Why?

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3. Explain Gravity separation process or Hydraulic washing process?[OR]

How will you concentrate oxide ores?[OR]

Explain the suitable method to concentrate hematite and tinstone ores.

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4. Write a notes on alkali leaching process?

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5. Complete the following reaction.

(a) $ZnS + O_2 \xrightarrow{\Delta} ?$

(b) $P_4 + O_2 \rightarrow ?$

(c) $CaCO_3 \Delta \rightarrow ?$

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6. Explain Aluminothermic process.

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7. Why aluminium can be used as a reducing agent for the reduction of chronic oxide?

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8. Write notes on liquation.

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9. Write the application of Iron (Fe).

10. Mention the uses of Gold (Au).

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

by giving equation.

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12. Account for the following facts:

(a)The reduction of a metal oxide is easier if the metal formed is in liquid state at the temprature of reduction.

(b)The reduction of Cr_2O_3 with Al is thermodynamically feasible ,yet it does not occur at room temprature.

(c)Pine oil is used in forth floatation method.

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13. Write the chemical reactions for purification of Zirconium by Van Arkel's process

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Additional Questions 5 Mark Questions Answer The Following Questions

1. Explain froth floatation process.[OR]

How will you concentration sulphide ores? [OR]

Explain the concentration of copper pyrites and galena ores.

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2. Discuss the magnetic separation process. [OR]

How will you separate magnetic ores from non-magnetic ores?

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3. Write a note on thermodynamic principle of metallurgy.

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4. Explain the observations from the Ellingham diagram.

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5. Discuss the application of the Ellingham diagram:

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6. Explain the method to purify Titanium metal

.[OR]

Explain Van-Arkel method for refining Titanium.

[OR]

How will you purify metals by using iodine?

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7. List out the application of aluminium.

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8. Complete the following reactions.

(i) $Cr_2O_3 + Al \xrightarrow{\Delta} ?$

(ii) $B_2O_3 + Na \rightarrow ?$

(iii) $ThO_2 + Ca \xrightarrow{?} ?$

(iv) $Mn_3O_4 + c \rightarrow ?$

(v) $Ag_2O + H_2 \rightarrow ?$

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