GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY SECOND YEAR   CHEMISTRY

UNIT 1   METALLURGY

Choose the correct answer:

1. Bauxite has the composition

   a) Al_2O_3 b) $Al_2O_3.nH_2O$ c) $Fe_2O_3.2H_2O$ d)None of these

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

3. Which one of the following reaction represents calcinations?

   a) $2Zn + O_2 \longrightarrow 2ZnO$ b) $2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$

   c) $MgCO_3 \longrightarrow MgO + CO_2$ d)Both (a) and (c)

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

   a) PbO b) Al_2O_3 c) ZnO d) FeO

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

   a) Al b) Ni c) Cu d) Zn

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

   a) ΔG_f^0 of sulphide is greater than those for CS_2 and H_2S.

   b) ΔG_r^0 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.

7. Match items in column - I with the items of column – II and assign the correct code.
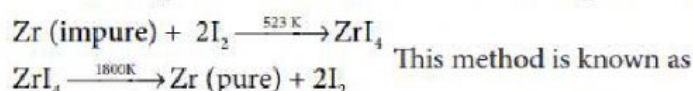
	Column-I		Column-II
A	Cyanide process	(i)	Ultrapure Ge
B	Froth floatation process	(ii)	Dressing of ZnS
C	Electrolytic reduction	(iii)	Extraction of Al
D	Zone refining	(iv)	Extraction of Au
		(v)	Purification of Ni

	A	B	C	D
(a)	(i)	(ii)	(iii)	(iv)
(b)	(iii)	(iv)	(v)	(i)
(c)	(iv)	(ii)	(iii)	(i)
(d)	(ii)	(iii)	(i)	(v)

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

   a) Smelting
   b) Calcination
   c) Roasting
   d) Electromagnetic separation

9. Which one of the following is not feasible

   a) $Zn(s) + Cu^{2+}(aq) \longrightarrow Cu(s) + Zn^{2+}(aq)$

   b) $Cu(s) + Zn^{2+}(aq) \longrightarrow Zn(s) + Cu^{2+}(aq)$

   c) $Cu(s) + 2Ag^{+}(aq) \longrightarrow 2Ag(s) + Cu^{2+}(aq)$

   d) $Fe(s) + Cu^{2+}(aq) \longrightarrow Cu(s) + Fe^{2+}(aq)$

10. Electrochemical process is used to extract

    a) Iron   b) Lead   c) Sodium   d) silver

11. Flux is a substance 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

12. Which one of the following ores is best concentrated by froth – floatation method?

    a) Magnetite
    b) Haematite
    c) Galena
    d) Cassiterite

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

14. Zinc is obtained from ZnO by

    a) Carbon reduction
    b) Reduction using silver
    c) Electrochemical process
    d) Acid leaching

15. Extraction of gold and silver involves leaching with cyanide ion. silver is later recovered by (NEET-2017)

    a) Distillation
    b) Zone refining

    c) Displacement with zinc
    d) liquation

16. Considering Ellingham diagram, which of the following metals can be used to reduce alumina? (NEET-2018)

    a) Fe
    b) Cu

    c) Mg
    d) Zn

17. The following set of reactions are used in refining Zirconium

    $Zr \text{ (impure)} + 2I_2 \xrightarrow{523 \text{ K}} ZrI_4$
    $ZrI_4 \xrightarrow{1800K} Zr \text{ (pure)} + 2I_2$ This method is known as

    a) Liquation
    b) van Arkel process

    c) Zone refining
    d) Mond's process

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

    a) Leaching
    b) Roasting

    c) Froth floatation
    d) Both (a) and (c)

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

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

21. Which of the following plot gives Ellingham diagram

    a) $\Delta S \text{ Vs } T$
    b) $\Delta G^0 \text{ Vs } T$

    c) $\Delta G^0 \text{ Vs } \dfrac{1}{T}$
    d) $\Delta G^0 \text{ Vs } T^2$

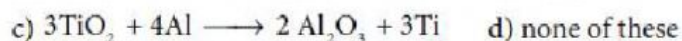22. In the Ellingham diagram, for the formation of carbon monoxide

a) $\left(\dfrac{\Delta S^0}{\Delta T}\right)$ is negative

b) $\left(\dfrac{\Delta G^0}{\Delta T}\right)$ is positive

c) $\left(\dfrac{\Delta G^0}{\Delta T}\right)$ is negative

d) initially $\left(\dfrac{\Delta T}{\Delta G^0}\right)$ is positive, after 700^0C, $\left(\dfrac{\Delta G^0}{\Delta T}\right)$ is negative

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

a) $Cr_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Cr$ b) $Al_2O_3 + 2Cr \longrightarrow Cr_2O_3 + 2Al$

c) $3TiO_2 + 4Al \longrightarrow 2Al_2O_3 + 3Ti$ d) none of these

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.