NEET CHEMISTRY PRACITCE PAPER

Time : 60 Mins | **8 GENERAL PRINCIPLES AND PROCESS OF ISOLATION OF ELEMENTS 1** | **Marks : 200**

1. During extraction of aluminium from bauxite,
   a) the concentration of ore is done by gravity separation method
   b) molten mixture of aluminium oxide, cryolite or fluorspar is electrolysed
   c) impure aluminium is refined by liquation
   d) molten aluminium is obtained at cathode while fluorine is liberated at anode.
2. What would happen when a solution of potassium chromate is treated with an excess of dilute nitric acid?
   a) $Cr_2O_4^{2-}$ is reduced to +3 state of Cr b) $Cr_2O_4^{2-}$ is oxidised to +7 state of Cr.
   c) Cr^{3+} and $Cr_2O_7^{2-}$ are formed d) $Cr_2O_7^{2-}$ and H_2O are formed
3. Assertion: van Arkel method is used for refining of zinc.
   Reason: In this method impure metal is evaporated to obtain the pure metal as distillate.
   a) If both assertion and reason are true and reason is the correct explanation of assertion.
   b) If both assertion and reason are true but reason is not the correct explanation of assertion
   c) If assertion is true but reason is false. d) If both assertion and reason are false
4. From the Ellingham graph between Gibbs energy and temperature, out of C and CO which is a better reducing agent for ZnO?
   a) Carbon b) CO c) Both of these d) None of these
5. Assertion: Magnesium metal is not used for the reduction of alumina in the metallurgy of aluminium.
   Reason : MgO curve lies above Al_2O_3 curve in Ellingham diagram.
   a) If both assertion and reason are true and reason is the correct explanation of assertion.
   b) If both assertion and reason are true but reason is not the correct explanation of assertion
   c) If assertion is true but reason is false. d) If both assertion and reason are false
6. Sometimes it is possible to separate two sulphide ores by adjusting the proportion of oil to water or by using depressants. When a depressant NaCN is added to an ore containing ZnS and PbS, what is the correct observation?
   a) NaCN prevents PbS from coming to the froth but allows ZnS to come with froth.
   b) NaCN prevents ZnS from coming to the froth but allows PbS to come with froth
   c) NaCN prevents frothing of both ZnS and PbS, hence no froth is formed.
   d) NaCN does not act as depressant hence a mixture of PbS and ZnS is found in froth
7. One mole of acidified $K_2Cr_2O_7$ on reaction with excess KI will liberate mole(s) of L;
   a) 3 b) 1 c) 7 d) 2
8. Sulphide ores of metals are usually concentrated by froth flotation process. Which one of the following sulphide ores offer an exception and concentrated by chemical leaching
   a) Galena b) Copper pyrite c) Sphalerite d) Argentite
9. Assertion: Roasting is a process in which the ore is heated strongly in absence of air.
   Reason: Concentration of sulphide ore is done by calcination.
   a) If both assertion and reason are true and reason is the correct explanation of assertion.
   b) If both assertion and reason are true but reason is not the correct explanation of assertion
   c) If assertion is true but reason is false. d) If both assertion and reason are false
10. Wrought iron is manufactured from cast iron by heating it with:
    a) C b) $CaCO_3$ c) Fe_2O_3 d) SiO_2

11. Which of the following statements is not correct?
    a) Zinc can be extracted from its ore by roasting followed by reduction with coke
    b) In reverberatory furnace, both oxidation and reduction processes can be carried out
    c) Silver is purified by distillation or liquation process. d) Highly pure metals are obtained by zone refining.
12. Chromatography is a useful method for purification of elements which are
    a) very reactive b) available in minute quantities c) present in abundance d) highly electropositive
13. Cryolite and fluorspar are mixed with Al_2O_3 during electrolysis for extraction of aluminium to
    a) increase the mass of the reaction mixture b) get other products at anode like fluorine
    c) lower the melting point and increase the conductivity of the electrolyte
    d) reduce aluminium oxide by cryolite
14. An ore of tin containing, $FeCrO_4$ is concentrated by
    a) gravity separation b) magnetic separation c) froth floatation d) leaching.
15. The oil used as frothing agent in froth floatation process is
    a) coconut oil b) castor oil c) palmitic oil d) pine oil
16. Which of the following statements are incorrect?
    I. Zinc can be extracted by self-reduction.
    II. A depressant prevents certain type of particles to come to the froth.
    III. Copper matte contains ZnS and Cu_2S,
    IV. The solidified copper obtained from reverberatory furnace has blistered appearance due to evolution of SO_2 during the extraction
    a) I and II b) II and III c) I and III d) II and IV
17. Assertion: Minerals are naturally occurring chemical substances in the earth's crust obtainable by mining.
    Reason: Minerals are also known as ores.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.
    b) If both assertion and reason are true but reason is not the correct explanation of assertion.
    c) If assertion is true but reason is false.
    d)
    If both assertion and reason are false Only those minerals which are viable to be used as sources of metal are known as ores.
18. At the point of intersection of Al_2O_3 and MgO curves (A), $\triangle G^o$ becomes zero for the reaction,
    $\frac{2}{3}Al_2O_3 + 2Mg \longrightarrow 2MgO + \frac{4}{3}Al$
    Above this point, magnesium can reduce alumina. Although thermodynamically feasible, Mg is not used for reduction of Al_2O_3 because
    a) temperature required is very hjgh b) the yield of metal is very low c) value of, $\triangle G^O$ becomes positive
    d) magnesium is not used as reducing agent for any reaction.
19. During the formation of the slag by the reaction of flux and impurities which of the following is an example of acidic and basic flux?
    $FeO + SiO_2 \rightarrow FeSiO_3$
    $SiO_2 + MgO \rightarrow MgSiO_3$
    a) (i) SiO_2 - Acidic flux (ii) MgO - Basic flux b) (i) SiO_2 - Basic flux (ii) MgO - Acidic flux
    c) (i) SiO_2 - Basic flux (ii) MgO - Basic flux d) (i) SiO_2 - Acidic flux (ii) MgO - Acidic flux
20. The powdered ore is agitated with water or washed with running stream of water. The heavy ore particles and lighter impurities are separated. This method of concentration is known as
    a) metallurgy b) leaching c) gravity separation d) froth floatation process
21. Which of the following is not correct observation based on Ellingham diagram?

a) A metal can reduce the oxide of other metal which lies above it in Ellingham diagram
b) CO is more effective than C as a reducing agent below 710°C
c) ΔG^o of metal oxides is higher than that of CO_2 hence oxidation of metal sulphides to oxides is not favourable
d) Need for conversion of metal sulphide to metal oxide before reduction can be explained thermodynamically.

22. In metallurgical process, aluminium acts as
a) an oxidising agent b) a reducing agent c) acidic flux d) basic flux.

23. Which of the following is magnetite?
a) Fe_2CO_3 b) Fe_2O_3 c) Fe_3O_4 d) $Fe_2O_3 \cdot 3H_2O$

24. The main difference between cast iron and pig iron is
a) cast iron is purest form ofiron while pig iron is impure
b) cast iron has lower carbon content (3%) as compared to pig iron (4%) and is extremely hard and brittle
c)
pig iron contains many impurities like S, P, Si and Mn while cast iron does not contain any impurity and can be casted into any shape
d) cast iron is soft and malleable while pig iron is extremely hard and brittle

25. Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true?
a) Carbon and hydrogen are suitable reducing agents for metal sulphides
b) The $\Delta_f G^0$ of the sulphide is greater than those for CS_2 and H_2S
c) The $\Delta_f G^0$ is negative for roasting of sulphide ore to oxide
d) Roasting of the sulphide to the oxide is thermodynamically feasible

26. What happens when potassium iodide reacts withacidic solution of potassium dichromate?
a) It liberates iodine b) Potassium sulphate is formed c) Chromium sulphate is formed
d) All the above products are formed

27. Which of the following is not an example of roasting?
a) $2ZnS + 3O_2 \rightarrow 2ZnO + 2SO_2$ b) $2PbS + 3O_2 \rightarrow 2PbO + 2SO_2$ c) $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$
d) $2Cu_2O + Cu_2S \rightarrow 6Cu + SO_2$

28. Assertion: In the metallurgy of aluminium, purified Al_2O_3 is mixed with Na_3AlF_6 or CaF_2
Reason: Na_3AlF_6 or CaF_2 lowers the melting point of mixture and increase its conductivity.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false

29. Blister copper is
a) impure copper b) obtained in self-reduction process during bessemerisation c) both are correct
d) none is correct

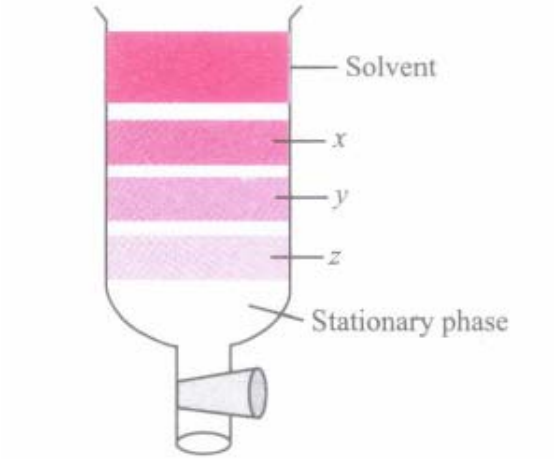
30. The following reactions take place in the blast furnace in the preparation of impure iron. Identify the reaction pertaining to formation of the slag:
a) $\mathrm{Fe_2O_3}(s) + 3\mathrm{CO}(g) \rightarrow 2\mathrm{Fe}(l) + 3\mathrm{CO_2}(g)$ b) $\mathrm{CaCO_3}(s) \rightarrow \mathrm{CaO}(s) + \mathrm{CO_2}(g)$
c) $\mathrm{CaO}(s) + \mathrm{SiO_2}(s) \rightarrow \mathrm{CaSiO_3}(s)$ d) $2\mathrm{C}(s) + \mathrm{O_2}(g) \rightarrow 2\mathrm{CO}(g)$

31. Which of the following elements is present as the impurity to the maximum extent in the pig iron?
a) Carbon b) Silicon c) Phosphorus d) Manganese

32. The reaction of H_2O_2 with hydrogen sulphide is an example of reaction:
a) addition b) oxidation c) reduction d) acidic

33. Elemental silicon to be used as a semiconductor is purified by
a) heating under vacuum b) floatation c) zone refining d) electrolysis

34. Column chromatography involves separation of a mixture over a column of adsorbent (stationary phase) packed in a glass tube. Depending upon the degree of adsorption complete separation takes place. In the given column, three coloured bands x, y, z are formed. Identify the correct statement.



a) x, y and z are adsorbed to the same extent.
b) The most readily adsorbed component is retained near the top (x).
c) The most readily adsorbed component comes down (z).
d) x, y, z layers are formed according to the wavelengths of the colours not on the basis of adsorption.

35. Which of the following reactions is not taking place in Blast furnace during metallurgy of iron between the temperature range of 500-800 K?
a) $FeO + CO \rightarrow Fe + CO_2$ b) $3Fe_2O_3 + CO \rightarrow 2Fe_3O_4 + 4CO_2$ c) $Fe_3O_4 + 4CO \rightarrow 3Fe + 4CO_2$
d) $Fe_2O_3 + CO \rightarrow 2FeO + CO_2$

36. Blister copper obtained during extraction from cuprous oxide is called so because
a) it has blister like eruptions due to evolution gas. b) it has a shining surface like blister
c) it is the most impure form of copper d) its surface is uneven due to different thickness at different places

37. During the extraction of haernatite, limestone is added which acts as
a) flux b) slag c) reducing agent d) gangue

38. Electrolytic refining is used to purify which of the; following metals?
a) Cu and Zn b) Ge and Si c) Zr and Ti d) Zn and Hg

39. How do we separate two sulphide ores by froth floatation method?
a) By using excess of pine oil b) By adjusting proportion of oil to water or using depressant
c) By using collectors and froth stabilisers like xanthates.
d) By using some solvent in which one of the sulphides is soluble.

40. The significance of leaching in the extraction of aluminium is:
a) it helps removing the impurities like SiO_2, Fe_2O_3, etc from the bauxite ore b) it converts the ore into oxide
c) it reduces melting point of the ore d) it eliminates water from bauxite.

41. Arrange the oxides of manganese according to increasing acidic strength.
a) $MnO < Mn_3O_4 < Mn_2O_3 < MnO_2 < Mn_2O_7$ b) $Mn_2O_7 < MnOz < Mn_2O_3 < Mn_3O_4 < MnO$
c) $MnO_2 < Mn_2O_7 < Mn_3O_4 < Mn_2O_3 < MnO$ d) $Mn_3O_4 < Mn_2O_3 < Mn_2O_7 < MnO_2 < MnO$

42. Match the column I with column II and mark the appropriate choice.

Column-I		**Column-II**	
A	Highly electropositive metals	(i)	Carbon reduction
B	Copper	(ii)	CO reduction
C	Iron	(iii)	Self reduction

D	Zinc	(iv)	Electrolysis

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

43. Match items of 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)

A	B	C	D
(i)	(ii)	(iii)	(iv)

b)

A	B	C	D
(iii)	(iv)	(v)	(i)

c)

A	B	C	D
(iv)	(ii)	(iii)	(i)

d)

A	B	C	D
(ii)	(iii)	(i)	(v)

44. For which of the following ores froth floatation method is used for concentration?
a) Haematite b) Zinc blende c) Magnetite d) Carnallite

45. Which of the following metals is not extracted by leaching?
a) Aluminium b) Mercury c) Silver d) Gold

46. Which process of purification is represented by the following reaction?

$$\underset{Impure}{Ti} + 2I_2 \xrightarrow{250^oC} TiI_4 \xrightarrow{1400^oC} \underset{pure}{Ti} + 2I_2$$

a) Zone refining b) Monds process c) Cupellation d) van Arkel process

47. Fill in the blanks with the correct choice.
The undesired impurities present in the ores are called (i) . To remove the volatile impurities from the ore, the (ii) process is carried out.Flux combines with non-fusible impurities to form iii CaO acts as a (iv) flux.

a)

(i)	(ii)	(iii)	(iv)
gangue	roasting	slag	acidic

b)

(i)	(ii)	(iii)	(iv)
gangue	calcination	slag	basic

c)

(i)	(ii)	(iii)	(iv)
anode mud	leaching	matrix	acidic

d)

(i)	(ii)	(iii)	(iv)
gangue	roasting	solution	acidic

48. Considering Ellingham diagram, which of the following metals can be used to reduce alumina?
a) Mg b) Zn c) Fe d) Cu

49. Assertion: Tin is refined by liquation method.
Reason: Tin has low melting point as compared to impurities.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false

50. Which of the following reactions show the process of smelting?
a) $2PbO + PbS \rightarrow 3Pb + SO_2$ b) $2Na[Au(CN)_2] + Zn \rightarrow Na2[Zn(CN)_4] + 2Au$ c) $PbO + C \rightarrow Pb + CO$
d) $2HgS + 3O_2 \rightarrow 2HgO + 2SO_2$