PRE-MEDICAL

INORGANIC CHEMISTRY

ENTHUSIAST | LEADER | ACHIEVER

EXERCISE

Metallurgy

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions) — Build Up Your Understanding

1. Which of the following is not an ore of Iron:-
(1) Haematite (2) Limonite
(3) Cassiterite (4) Magnetite
ML0001

2. Aluminium is obtained from Al_2O_3 by –
(1) Thermal reduction.
(2) Hydro metallurgical method.
(3) Electrolytic reduction.
(4) Reduction by iron.
ML0002

3. Zinc blende on roasting in air gives :–
(1) Zinc carbonate
(2) SO_2 and ZnO
(3) ZnS and $ZnSO_4$
(4) CO_2 and ZnO
ML0003

4. The oxide cannot be reduced by coke
(1) Cu_2O, ZnO (2) Fe_2O, ZnO
(3) CaO, K_2O (4) PbO, Fe_3O_4
ML0005

5. An example of halide ores is:-
(1) Galena (2) Bauxite
(3) Cinnabar (4) Cryolite
ML0007

6. Which is not a basic flux :-
(1) Silica (2) Lime stone
(3) Calcite (4) Quick lime
ML0008

7. Iron pyrites ore is concentrated by:-
(1) Froth floatation
(2) Electrolysis
(3) Roasting
(4) Magnetic separation
ML0009

8. Which of the following metal is extracted by electrolytic reduction process of its halide are :-
(1) Copper (2) Iron
(3) Sodium (4) Aluminium
ML0010

9. Which of the following metal can not be extracted by smelting process:-
(1) Lead (2) Zinc
(3) Iron (4) Aluminium
ML0011

10. The reducing agent for the extraction of iron metal at low temperature in a blast furnace is :-
(1) Coke
(2) Carbon
(3) Carbon dioxide
(4) Carbon monoxide
ML0012

11. The reduction of Cr_2O_3, by heating it with aluminium is known as:-
(1) Smelting
(2) Roasting
(3) Calcination
(4) Aluminothermite process
ML0014

12. Which of the following is obtained by hydrometallurgy :-
(1) Copper (2) Gold
(3) Silver (4) All of these
ML0015

13. Aluminium is purified by :-
(1) Roasting (2) Sublimation
(3) Electrolytic refining (4) Reduction with carbon
ML0016

14. In Goldschmidt thermite process, reducing agent is:-
(1) Fe (2) Na (3) Ca (4) Al
ML0017

15. Heating the sulphide ore in air to remove sulphur is known as:-
(1) Roasting (2) Calcination
(3) Smelting (4) Fluxing
ML0018

16. Liquation process is used for refining:-
(1) Bismuth (2) Lead
(3) Tin (4) All
ML0019

17. A mineral is called ore if
(1) Metal present in the mineral is costly
(2) A metal can be extracted from it
(3) A metal can be extracted profitably from it
(4) A metal can not be extracted from it
ML0020

18. Self reduction process is used in the extraction of:-
(1) Cu & Pb (2) Zn & Hg
(3) Cu & Al (4) Fe & Pb
ML0021

19. The process of converting hydrated Alumina into anhydrous Alumina is called:-
(1) Roasting (2) Calcination
(3) Smelting (4) Dressing
ML0023

20. The metallurgical process in which a metal is obtained from its oxide ore :-
(1) Smelting (2) Roasting
(3) Calcination (4) Froth floatation
ML0024

21. In the extraction of copper, metal obtained in the Bessemer converter is represented by which reaction ?
(1) $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$
(2) $Cu_2S \rightarrow 2Cu + S$
(3) $Fe + Cu_2O \rightarrow 2Cu + FeO$
(4) $2Cu_2O \rightarrow 4Cu + O_2$
ML0025

22. Among following :–
(a) Zinc blende; ZnO
(b) Chromite; Magnetic separation.
(c) Bauxite; $Al_2O_3.2H_2O$
(d) Liquation; Hg like liquid metals
Which is/are not correctly matched :–
(1) (a) only (2) (b) only
(3) (d) only (4) (a) & (d) both
ML0027

23. Silver can be separated from lead by :-
(1) Distillation (2) Amalgamation
(3) Filtration (4) Cupellation
ML0028

24. The maximum temperature obtained in the....region of the blast furnace used in extraction of iron:-
(1) Reduction (2) Combustion
(3) Fusion (4) Slag formation
ML0031

25. The concentration of chromite (FeO. Cr_2O_3) is done by :-
(1) Leaching process
(2) Magnetic separation
(3) Froth -flotation
(4) Calcination
ML0032

26. Which of the following process represents smelting process
(1) $2\ PbS + 3O_2 \rightarrow 2PbO + 2SO_2\uparrow$
(2) $Al_2O_3.\ 2H_2O \rightarrow Al_2O_3 + 2H_2O$
(3) $Fe_2O_3 + CO \rightarrow 2Fe + 2CO_2$
(4) $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr + Heat$
ML0033

27. Which of the following match are incorrect :-
(a) Goldschmidt aluminothermite process - Cr_2O_3
(b) Mac Arthur cyanide process - Fe
(c) Mond process - Ni
(d) Van Arkel process – Au
(1) a, c (2) c, d
(3) b, d (4) a, b
ML0035

28. Electro metallurgical process (electrolysis of fused salt) is employed to extract :–
(1) Lead (2) Silver
(3) Sodium (4) Copper
ML0036

29. In the extraction of copper from copper pyrites, iron is removed as:-
(1) $FeSO_4$ (2) $FeSiO_3$
(3) Fe_3O_4 (4) Fe_2O_3
ML0037

30. Which one of the following metals can not be extracted by using Al as a reducing agent :-
(1) Na from Na_2O
(2) Cr from Cr_2O_3
(3) Mn from MnO_2
(4) V from V_2O_5
ML0038

31. In the electrolytic reduction for aluminium extraction the electrolyte used is :-
(1) Fluorides of Al, Na and Ca
(2) $Al(OH)_3$ in NaOH solution
(3) An aqueous solution of $Al_2(SO_4)_3$
(4) Molten Al_2O_3
ML0039

32. Which metal can be purified by distillation :-
(1) Cu (2) Ag
(3) Fe (4) Hg
ML0041

33. Carbon cannot be used in the reduction of Al_2O_3 because :-

(1) Carbon cannot reduce Al_2O_3

(2) the enthalpy of formation of CO_2 is more than that of Al_2O_3

(3) pure carbon is not easily available

(4) the enthalpy of formation of Al_2O_3 is too high

ML0042

34. Match list I with list II and select the correct answer using the codes given below the lists

List I	**List II**
A. Van Arkel method	I. Purification of titanium
B. Cyanide process	II. Concentration of Ag, Au
C. Cupellation	III. Purification of copper
D. Poling	IV. Refining of silver

Codes :

	A	B	C	D
(1)	I	II	IV	III
(2)	II	I	III	IV
(3)	IV	II	I	III
(4)	III	I	II	IV

ML0043

35. Anode mud obtained in electrolytic refining of copper contains :-

(1) Ag (2) Au (3) Pt (4) All

ML0044

36. Which of the following reaction is not involved in thermite process :-

(1) $3Mn_3O_4 + 8Al \longrightarrow 9Mn + 4Al_2O_3$

(2) $Cr_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Cr$

(3) $2Fe + Al_2O_3 \longrightarrow 2Al + Fe_2O_3$

(4) $B_2O_3 + 2Al \longrightarrow 2B + Al_2O_3$

ML0046

37. Alumino thermite process is used for the extraction of metals, whose oxides are :-

(1) Strongly acidic

(2) Not easily reduced by carbon

(3) Not easily reduced by hydrogen

(4) Stongly basic

ML0047

38. Match the following :-

I	**II**
(A) Calcination	a. $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$
(B) Roasting	b. $Fe_2O_3.nH_2O \rightarrow Fe_2O_3 + nH_2O$
(C) Slag formation	c. $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$
(D) Thermite process	d. $SiO_2 + FeO \rightarrow FeSiO_3$

	A	**B**	**C**	**D**
(1)	a	b	c	d
(2)	b	a	d	c
(3)	d	a	b	c
(4)	c	a	b	d

ML0048

39. Main source of lead is PbS. It is converted to Pb by :-

A : $PbS \xrightarrow[\Delta]{air} PbO + SO_2$;

$PbO \xrightarrow[\Delta]{C} Pb + CO_2$

B : $PbS \xrightarrow[\Delta]{\text{insufficient air}} PbO + SO_2$;

$PbS + PbO \xrightarrow{\Delta} Pb + SO_2$

Self reduction process is :

(1) A (2) B

(3) both (4) none

ML0049

40. Match **List-I** with **List-II** and select the correct answer using the codes given below in the lists.

List-I (Metals)	**List-II (Process/methods involved in extraction)**
(a) Ni	1. Self reduction
(b) Al	2. Liquation
(c) Cu	3. Vapour phase refining
(d) Sn	4. Bayer's process

	(a)	**(b)**	**(c)**	**(d)**
(1)	3	1	2	4
(2)	3	4	1	2
(3)	1	2	4	3
(4)	3	2	4	1

ML0051

41. Reducing agent in blast-furnace in extraction of Fe from Haematite is :-

(1) Coke in furnace

(2) Coke in upper part and CO in lower part of furnace.

(3) CO in most parts of the furnace

(4) CO in the furnace.

ML0053

42. $PbS \xrightarrow[\Delta]{air} X$, $X + PbS \longrightarrow Pb + SO_2$. 'X' may be :-

(1) PbO (2) PbO_2

(3) PbO and $PbSO_4$ (4) PbO_2 and PbO

ML0054

43. Extraction of zinc from zinc blende is achieved by:

(1) electrolytic reduction

(2) roasting followed by reduction with carbon

(3) calcination followed by reduction with another metal

(4) roasting followed by self-reduction

ML0056

44. Match the following

1. Zincite	P	Sulphide ore
2. Malachite	Q	halide ore
3. Horn silver	R	Oxide ore
4. Iron pyrities	S	Carbonate ore

(1) 1 – R; 2 – P; 3 – Q; 4 – S

(2) 1 – R; 2 – S; 3 – Q; 4 – P

(3) 1 – S; 2 – R; 3 – P; 4 – Q

(4) 1 – Q; 2 – S; 3 – P; 4 – R

ML0058

45. Which reaction is involved in extraction of Ag by cyanide process

(1) $AgBr + Na_2S_2O_3 \longrightarrow Na_3[Ag(S_2O_3)_2]$

(2) $AgCl + NH_4OH \longrightarrow [Ag(NH_3)_2]Cl$

(3) $Ag_2S + NaCN \longrightarrow Na[Ag(CN)_2]$

(4) None

ML0062

46. Most abundant element in earth crust by weight is

(1) H (2) He

(3) Fe (4) Al

ML0110

47. Gravity separation is based on

(1) difference in water solubility

(2) difference in specific gravity

(3) Both

(4) None

ML0111

48. Correct statement regarding froth floatation method is

(1) Ore particles wetted by water

(2) Froth carries the gangue particles

(3) As a depressant AgCl can be used for separation of ZnS and PbS

(4) Aniline can be used as froth stabilizers

ML0112

49. Leaching can be used for which set of metals extraction

(1) Fe, Cu, Zn (2) Al, Fe, Ag

(3) Al, Ag, Au (4) Ag, Au, Zn

ML0113

50. In electrolytic refining of copper, anode is of

(1) Pure copper

(2) Graphite

(3) Impure copper

(4) Na/Ag

ML0114

51. Zone refining method is based on that

(1) Impurities are more soluble in water

(2) impurities are more soluble in solid metal

(3) impurities are more soluble in molten metal

(4) impurities are more soluble in vapour metal

ML0115

52. Which method is an example of vapour phase refining.

(1) Mond's process (2) Van Arkel method

(3) Both 1 & 2 (4) None

ML0116

53. Van Arkel method of refining is used for :

(1) Zr, Ti (2) Ni, Pd

(3) Sn, Pb (4) Zn

ML0117

54. Which one of the following can be obtained by carbon reduction of its metal oxide ?

(1) Cr (2) Fe

(3) Mn (4) Mg

ML0118

55. The chemical formula of calamine is -

(1) $ZnCO_3$ (2) $CuFeS_2$

(3) Cu_2O (4) ZnO

ML0119

56. Which of the following acts as collector in the froath floatation of galena ?

(1) Sodium ethyl xanthate (2) Pine oil

(3) $CuSO_4$ solution (4) NaCN or KCN

ML0120

57. The iron obtained from the blast furnace is called-

(1) Pig iron (2) cast iron

(3) wrought iron (4) Steel

ML0121

58. Magnetite is -

(1) Fe_3O_4 (2) Fe_2O_3

(3) Cu_2O (4) FeO

ML0122

59. Malachite green is -

(1) $CuCO_3.Cu(OH)_2$ (2) Cu_2S

(3) $CuFeS_2$ (4) Cu_2O

ML0123

EXERCISE-I (Conceptual Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	3	2	3	4	1	1	3	4	4	4	4	3	4	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	4	3	1	2	1	1	4	4	2	2	3	3	3	2	1
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	1	4	4	1	4	3	2	2	2	2	3	3	2	2	3
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
Ans.	4	2	4	3	3	3	3	1	2	1	1	1	1	1	

EXERCISE-II (Previous Year Questions)

AIPMT 2007

1. Sulphide ores of metals are usually concentrated by froth floatation process. Which one of the following sulphide ores offers an exception and is concentrated by chemical leaching?
(1) Sphalerite (2) Argentite
(3) Galena (4) Copper pyrites

ML0063

AIPMT-Pre 2011

2. Which of the following elements is present as the impurity to the maximum extent in the pig iron ?
(1) Manganese (2) Carbon
(3) Silicon (4) Phosphorus

ML0065

3. Which of the following pairs of metals is purified by Van Arkel method ?
(1) Ga and In (2) Zr and Ti
(3) Ag and Au (4) Ni and Fe

ML0066

AIPMT-Mains 2011

4. The following reactions take place in the blast furnace in the preparation of impure iron. Identify the reaction pertaining to the formation of the slag:-
(1) $2C(s) + O_2(g) \rightarrow 2CO(g)$
(2) $Fe_2O_3(s) + 3CO(g) \rightarrow 2Fe(\ell) + 3CO_2(g)$
(3) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
(4) $CaO(s) + SiO_2(s) \rightarrow CaSiO_3(s)$

ML0067

AIPMT-Pre 2012

5. Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of:
(1) $Al_2O_3 + Na_3AlF_6 + CaF_2$
(2) $Al_2O_3 + KF + Na_3AlF_6$
(3) $Al_2O_3 + HF + NaAlF_4$
(4) $Al_2O_3 + CaF_2 + NaAlF_4$

ML0068

6. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with:
(1) Iron sulphide (FeS)
(2) Carbon monoxide (CO)
(3) Copper (I) sulphide (Cu_2S)
(4) Sulphur dioxide (SO_2)

ML0069

AIPMT/NEET

7. Identify the alloy containing a non-metal as a constituent in it.
(1) Bell metal
(2) Bronze
(3) Invar
(4) Steel

ML0070

8. Which one of the following is a mineral of iron?
(1) Pyrolusite
(2) Magnetite
(3) Malachite
(4) Cassiterite

ML0071

Re-AIPMT 2015

9. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with :-
(1) copper(I) sulphide
(2) sulphur dioxide
(3) iron(II) sulphide
(4) carbon monoxide

ML0073

NEET-I 2016

10. 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

Code :

	(a)	(b)	(c)	(d)
(1)	(iv)	(ii)	(iii)	(i)
(2)	(ii)	(iii)	(i)	(v)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(iii)	(iv)	(v)	(i)

ML0075

NEET-II 2016

11. Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because:

(1) zinc has lower negative electrode potential than iron

(2) zinc has higher negative electrode potential than iron

(3) zinc is lighter than iron

(4) zinc has lower melting point than iron

ML0076

NEET(UG) 2017

12. Extraction of gold and silver involves leaching with CN^- ion. Silver is later recovered by :-

(1) distillation

(2) zone refining

(3) displacement with Zn

(4) liquation

ML0077

NEET(UG) 2018

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

(1) Fe (2) Zn

(3) Mg (4) Cu

ML0080

NEET(UG) 2019

14. Which one is malachite from the following ?

(1) $CuFeS_2$ (2) $Cu(OH)_2$

(3) Fe_3O_4 (4) $CuCO_3.Cu(OH)_2$

ML0124

NEET(UG) 2019 (ODISHA)

15. Identify the incorrect statement.

(1) The scientific and technological process used for isolation of the metal from its ore is known as metallurgy

(2) Minerals are naturally occurring chemical substances in the earth's crust

(3) Ores are minerals that may contain a metal

(4) Gangue is an ore contaminated with undesired materials

ML0125

NEET(UG) 2020

16. Identify the **correct** statement from the following:

(1) Pig iron can be moulded into a variety of shapes.

(2) Wrought iron is impure iron with 4% carbon.

(3) Blister copper has blistered appearance due to evolution of CO_2.

(4) Vapour phase refining is carried out for Nickel by Van Arkel method.

ML0142

NEET(UG) 2020(COVID-19)

17. Match the elements in Column I with methods of purification in Column II.

Column I	**Column II**
(a) Boron	(i) Van Arkel method
(b) Tin	(ii) Mond's process
(c) Zirconium	(iii) Liquation
(d) Nickel	(iv) Zone refining

(1) (a)-(iv) (b)-(iii) (c)-(i) (d)-(ii)

(2) (a)-(iv) (b)-(iii) (c)-(ii) (d)-(i)

(3) (a)-(ii) (b)-(i) (c)-(iv) (d)-(iii)

(4) (a)-(iii) (b)-(iv) (c)-(i) (d)-(ii)

ML0143

NEET(UG) 2021

18. Which one of the following methods can be used to obtain highly pure metal which is liquid at room temperature ?

(1) Electrolysis (2) Chromatography

(3) Distillation (4) Zone refining

ML0144

19. Which of the following reactions is the metal displacement reaction ? Choose the right option.

(1) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$

(2) $Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2Cr$

(3) $Fe + 2HCl \rightarrow FeCl_2 + H_2\uparrow$

(4) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2\uparrow$

ML0145

20. The maximum temperature that can be achieved in blast furnace is :

(1) upto 1200 K (2) upto 2200 K

(3) upto 1900 K (4) upto 5000 K

ML0146

NEET (UG) 2022

21. Match **List-I** with **List-II.**

List-I (Ores)	**List-II (Composition)**
(a) Haematite	(i) Fe_3O_4
(b) Magnetite	(ii) $ZnCO_3$
(c) Calamine	(iii) Fe_2O_3
(d) Kaolinite	(iv) $[Al_2(OH)_4Si_2O_5]$

Choose the correct answer from the options given below :

(1) (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)

(2) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(3) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

(4) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

ML0147

NEET (UG) 2022 (Overseas)

22. Given below are two statements :

Statement-I : The Ellingham diagram provides an idea about the feasibility of a reaction.

Statement-II : The Ellingham explains the rate of the reduction reactions.

In light of above statements, choose the most **appropriate** answer from the options given below

(1) **Statement-I** is incorrect and **Statement-II** is correct.

(2) Both **Statement-I** and **Statement-II** are correct.

(3) Both **Statement-I** and **Statement-II** are incorrect.

(4) **Statement-I** is correct and **Statement-II** is incorrect.

ML0148

Re-NEET (UG) 2022

23. Which one of the following is not a calcination reaction?

(1) $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

(2) $Fe_2O_3.xH_2O \xrightarrow{\Delta} Fe_2O_3 + xH_2O$

(3) $CaCO_3.MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

(4) $CaCO_3 + 2\,HCl \xrightarrow{\Delta} CaCl_2 + H_2O + CO_2$

ML0149

EXERCISE-II (Previous Year Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**2**	**2**	**2**	**4**	**1**	**3**	**4**	**2**	**1**	**1**	**2**	**3**	**3**	**4**	**4**
Que.	16	17	18	19	20	21	22	23							
Ans.	**1**	**1**	**3**	**2**	**2**	**1**	**4**	**4**							

EXERCISE-III (Analytical Questions) Master Your Understanding

1. In the extraction of silver, Ag_2S is dissolved in :
(1) HCl (2) HNO_3
(3) KCN (4) H_2SO_4
ML0083

2. The method of zone refining of metals is based on the principle of :-
(1) Greater mobility of the pure metal than that of the impurity
(2) Higher melting point of the impurity than that of the pure metal
(3) Greater noble character of the solid metal than that of the impurity
(4) Greater solubility of the impurity in the molten state than in the solid metal
ML0084

3. Which one of the following ores is best concentrated by froth-flotation method :
(1) Galena (2) Cassiterite
(3) Magnetite (4) Malachite
ML0085

4. Which of the following sulphides when heated strongly in air gives the corresponding metal ?
(1) Cu_2S (2) CuS
(3) FeS (4) HgS
ML0086

5. In the electrolytic method of obtaining aluminium from purified bauxite, cryolite is added to –
(1) Minimise the heat loss due to radiation
(2) Protect aluminium from oxygen
(3) dissolve bauxite and increases conductivity of solution
(4) Increases the melting point of bauxite
ML0088

6. Which of the following contains both Cu & Fe :-
(1) Chalcocite
(2) Chalcopyrites
(3) Malachite
(4) Epsum
ML0090

7. The metal that cannot be obtained by electrolysis of an aqueous solution of its salts is:
(1) Cu (2) Cr
(3) Ag (4) Ca
ML0091

8. In which of the following extration no reducing agent is required ?
(1) Iron from haematite
(2) Lead from galena
(3) Magnesium from carnallite
(4) Zinc from zinc blende
ML0093

9. Which of the following is/are correctly matched?
(1) Copper - Bessemer converter
(2) Iron - Blast furnance
(3) Chromium - Aluminothermite process
(4) All the above
ML0096

10. Correct statement regarding calcination and roasting is/are
(1) In calcination in presence of air, impurities are removed as non-volatile matter.
(2) Roasting is done at temperature above the melting point
(3) Copper matte contains FeS and CuS.
(4) Heating of concentrated ore in presence of air below it's fusion temperature is roasting.
ML0126

11. When ZnS and PbS mineral are present together then NaCN is added as a depressent to separate them in froth floatation method, because :
(1) $Pb(CN)_2$ is precipitated while no effect on ZnS
(2) ZnS forms soluble complex $Na_2[Zn(CN)_4]$
(3) PbS forms soluble complex $Na_2[Pb(CN)_4]$
(4) It decreases the floatation property of PbS by making its hydrophilic
ML0127

12. In extraction of Ag and Au when metal is recovered by displacement method - here Zn act as
(1) Oxidising agent (2) Reducing agent
(3) Catalyst (4) Inhibitor
ML0128

13. Incorrect statement about Ellingham diagram is
(1) It is a graph between ΔH vs T
(2) It is a kinetic approach on metallurgical processes
(3) It does not gives any idea about suitable choice of reductant.
(4) all of these
ML0129

14. In the metallurgy of Aluminium, role of cryolite is:
(1) it decrease melting point of the mixture
(2) it increase melting point of the mixture
(3) it increase electrical conductivity of mixture
(4) Both 1 and 3

ML0130

15. When impurity has greater affinity for oxygen and is easily oxidised as compare to metal then which process is used to refine metal ?
(1) Cupellation (2) Poling
(3) Zone refining (4) Electrorefining

ML0131

16. Which of the following process is involved in metallurgy of siliver ?
(1) Treating with NaCN or KCN
(2) Reduction by Zinc
(3) Cupellation
(4) All of the above

ML0132

17. Select the code representing the nature of the given statements as true (T) or false (F).
I. Hydraulic washing is also known as gravity separation
II. In Hydraulic washing, the lighter ore particles are washed away and heavy gangue particles are settled down.
III. Magnetic separation can be used if either the ore or the gangue is attracted towards magnetic field.
IV. Collectors enhance the non wettability of the mineral and cresol stabilises the froth in the froth floatation method.
(1) FTTT (2) TFTT
(3) TTFF (4) TTFT

ML0133

18. Choose the correct statement among the following
(1) Bauxite usually contains SiO_2, iron oxides and titanium oxide (TiO_2) as impurities.
(2) Leaching of impure bauxite is done by heating it with a solution of NaOH.
(3) Al_2O_3 is precipitated by neutralising the solution of sodium aluminate with CO_2 gas.
(4) All of the above

ML0134

19. Which of the following match is incorrect ?
(1) Malachite green ; $CuCO_3.Cu(OH)_2$
(2) Calamine ; $MgCO_3$
(3) Lime stone ; $CaCO_3$
(4) Carnellite ; $KCl\ MgCl_2.6H_2O$

ML0135

20. ΔG° vs T plot in Ellingham diagram having downward slope is related with which following reaction.
(1) $Mg(s) + \frac{1}{2}O_2(g) \longrightarrow MgO(s)$
(2) $2Ag(s) + \frac{1}{2}O_2(g) \longrightarrow Ag_2O(s)$
(3) $C(s) + \frac{1}{2}O_2(g) \longrightarrow CO(g)$
(4) $Ca(s) + \frac{1}{2}O_2(g) \longrightarrow CaO(s)$

ML0136

21. In the equation
$4M + 8CN^- + 2H_2O + O_2 \longrightarrow 4[M(CN)_2]^- + 4OH^-$
Identify the metal M
(1) Cu (2) Fe (3) Au (4) Zn

ML0137

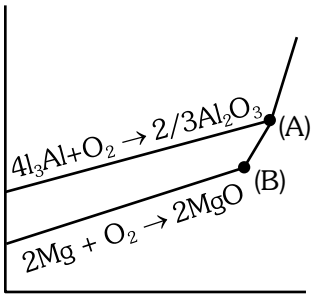
22. Which is incorrectly matched ?
(1) Electrolytic reduction – Extraction of Al
(2) Cyanide process – Reduction of PbO
(3) Leaching – Extraction of Ag
(4) Zone refining – Purification of Ge

ML0138

23. Which of the following statement is not true for calcination and roasting process ?
(1) In these process ore is converted into oxide form because oxides are easier to reduce.
(2) Carbonate ore is converted into oxide form by heating it in absence of air.
(3) Sulphide ore is converted into oxide form by heating it in presence of air.
(4) In both calcination and roasting process excess of sulphur is removed in form of SO_2.

ML0139

24. According to given ellingham diagram which statement is true.



(1) below point A, Al_2O_3 can be reduced by Mg.
(2) after point A, MgO can be reduced by Al.
(3) before point A, formation of MgO is more spontaneous than Al_2O_3.
(4) All of the above

ML0140

25. Which is not true for extraction of Cu from $CuFeS_2$?

(1) after roasting of $CuFeS_2$ a mixture of Cu_2S and FeS is obtained with small amount of Cu_2O and FeO.

(2) In smelting process carbon acts as a fuel as well as reducing agent.

(3) after smelting process a mixture of Cu_2S and FeS is obtained which is known as copper matte.

(4) Cu is obtained by reduction of Cu_2O by Cu_2S which is known as self reduction.

ML0141

EXERCISE-III (Analytical Questions) ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**3**	**4**	**1**	**4**	**3**	**2**	**4**	**3**	**4**	**4**	**2**	**2**	**4**	**4**	**1**
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	**4**	**2**	**4**	**2**	**3**	**3**	**2**	**4**	**4**	**2**					