

GLOSSARY

A

1. Adam's catalyst — Mixture of Pt and PtO
2. Agate — SiO_2
3. Albite — $\text{NaAlSi}_3\text{O}_8$
4. Aluminium Bronze — An alloy of Al and Cu
5. Alum stone — $\text{Al}_2(\text{SO}_4)_3 \cdot \text{K}_2\text{SO}_4 \cdot 4\text{Al}(\text{OH})_3$
6. Alunite — $\text{Al}_2(\text{SO}_4)_3 \cdot \text{K}_2\text{SO}_4 \cdot 4\text{Al}(\text{OH})_3$
7. Alum shale — $\text{Al}_2\text{O}_3 \cdot x\text{SiO}_2$ and FeS_2
8. Alane — $(\text{AlH}_3)_n$
9. Amatol — $\text{NH}_4\text{NO}_3 + \text{TNT}$
10. Amblygonite — LiFAPO_4
11. Ammonal — A mixture of Al and $\text{Al}(\text{NO}_3)_3$
12. Analcite — A zeolite $\text{Na}[\text{AlSi}_2\text{O}_6]\text{H}_2\text{O}$
13. Anglesite — PbSO_4
14. Anhydrite — CaSO_4
15. Anhydrone — $\text{Mg}(\text{ClO}_4)_2$
16. Anthracite — Hard and black coal containing 92-98% carbon
17. Apatite — $3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaF}_2$
18. Aqua dag — Suspension of graphite in water
19. Argentite — Ag_2S
20. Argentiferous galena — $\text{PbS} + \text{Ag}_2\text{S}$
21. Artificial carborundum — BN
or Inorganic Graphite
22. Asbestos — $\text{Ca Mg}_3(\text{SiO}_3)_4$
23. Azidocarbon disulphide — $(\text{SCSN}_3)_2$
24. Azurite — $\text{Cu}(\text{OH})_2 \cdot 2\text{CuCO}_3$
25. Aragonite — CaCO_3

B

1. Babbitt Metal — Iron alloy containing 1-2% of Cu
2. Baking powder —

$$\text{NaHCO}_3 + \begin{array}{c} \text{CH}(\text{OH})\text{COOH} \\ | \\ \text{CH}(\text{OH})\text{COOK} \end{array}$$
3. Barium xenate — Ba_2XeO_6
4. Baryta — BaO
5. Bauxite — $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$
6. Barytes — BaSO_4
7. Bell Metal — An alloy of Cu and Sn
8. Beacon lights — Ne lamps
9. Benitoite — $\text{BaTiSi}_3\text{O}_9$
10. Beryl — $3\text{BeO Al}_2\text{O}_3 6\text{SiO}_2$
11. Bismuthine — BiH_3
12. Bleaching powder — CaOCl_2
13. Blue vitriol — $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
14. Bituminous — Coal containing 88% C
15. Borax — $\text{Na}_2\text{B}_4\text{O}_7 10\text{H}_2\text{O}$
16. Bomargyrite — AgBr
17. Borazine — $\text{B}_3\text{N}_3\text{H}_6$
18. Boracite — $2\text{Mg}_3\text{B}_8\text{O}_{15} \text{MgCl}_2$
19. Bordeaux mixture — CuSO_4 and lime
20. Boric acid — H_3BO_3
21. Bornite — Cu_3FeS_2
22. Boronatrocacite — $\text{CaB}_4\text{O}_7 \text{NaBO}_2 8\text{H}_2\text{O}$
23. Brass — An alloy of Cu (60-80) and Zn (20-40%)
24. Bremston — S_3
25. Britannia Metal — An alloy having 86% Sn, 12% Sb and 2% Cu

NEET (Level-II)

26. Braunit — Mn_2O_3
26. Bronze — An alloy of Cu (75-90) and Sn (10-25%)
27. Bromocarnallite — $KBr \cdot MgBr_2 \cdot 6H_2O$
28. Butter of tin — $SnCl_4 \cdot 5H_2O$
- C**
1. Cadmipone — A mixture of CdS and BaSO₄
1. Calamine — $ZnCO_3$
2. Calcite — $CaCO_3$
3. Calgon — $Na_2[Na_4(PO_3)_6]$ or $(NaPO_3)_n$
4. Caliche — $NaNO_3$ containing about 0.2% NaIO₃
5. Calomel — Hg_2Cl_2
6. Candy fluid — KMnO₄ solution
7. Carbogen — A mixture of oxygen and 5-10% CO₂ for artificial respiration
8. Carborundum — SiC
9. Carnallite — KCl MgCl₂.6H₂O
10. Carnotite — Mineral of uranium containing a very small amount of radium
12. Caro's acid — H₂SO₅
13. Cassiterite — SnO₂
14. Catapleite — $Na_2ZrSi_3O_9 \cdot 2H_2O$
15. Caustic lotion — AgNO₃
16. Celestine — SrSO₄
17. Cementite — Fe₃C
18. Ceria — CeO₂
19. Cerite — Mineral containing Silicates of Ce, La, Pr, Nd and Sm
20. Cerrusite — PbCO₃
21. Chalcopyrite — CuFeS₂
22. Chile Salt Peter — NaNO₃
23. China Clay — Al₂O₃.SiO₂.2H₂O
24. Chinese white — ZnO

25. Chlorapatite — $3Ca_3(PO_4)_2 \cdot CaCl_2$
26. Chlorargyrite — AgCl
27. Chlorine azide — ClN₃
28. Chrome ochre — Cr₂O₅
29. Chrome red — PbCrO₄.PbO
30. Chrome yellow — PbCrO₄
31. Chromite — FeCr₂O₄
32. Cinnabar — HgS
33. Cisplatin — Cis-[PtCl₂(NH₃)₂]
34. Clevite — Mineral having He
35. Coal gas — A mixture of 5% H₂, 22.8% CH₄, 10.9% CO, 5% N₂ and 2.5% ethyne
36. Colemanite — Ca₂B₆O₁₁.5H₂O
37. Constantan — An alloy containing 60% Cu and 40% Ni.
38. Copper coins — Coins containing alloy of Cu, Zn and Sn
39. Copper glance — Cu₂S
40. Copper pyrites — CuFeS₂
41. Corundum — Al₂O₃
42. Cream of tartar — Potassium hydrogen tartarate
43. Cryolite — Na₃AlF₆
44. Crystal carbonate — Na₂CO₃.H₂O
45. Cuprite — Cu₂O
46. Cyanogen (CN)₂

D

1. Diaspore — Al₂O₃.H₂O
2. Dithionic acid — H₂S₂O₆
3. Dolomite — CaCO₃.MgCO₃
4. Drikold — Solid CO₂
5. Duralumin — An alloy having 95% Al, 0.5% Mg, 0.5% Mn and 4% Cu

E

1. Electron Metal — An alloy containing 95% Mg, 4.5% Zn and 0.5% Cu
2. Emerald — Al_2O_3
3. Epsomite or Epsom salt — $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
4. Euchlorine — A mixture of Cl_2 and ClO_2

F

1. Felspar — $\text{K AlSi}_3\text{O}_8$
2. Fenton's reagent — A mixture of FeSO_4 and H_2O_2 in alkaline medium
3. Ferrocene — $[\text{Fe}(\text{n}^5\text{-C}_5\text{H}_5)_2]$
4. Ferrosilicon — An alloy of Fe and Si
5. Fluorapatite — $3\text{Ca}_3(\text{PO}_4)_2\text{CaF}_2$
6. Fluorspar or fluorite — CaF_2
7. Fool's gold — CuFeS_2
8. Fermi's salt — KHF_2
9. Fowler's solution — NaAsO_2 solution
10. Franklinite — $(\text{Zn, Mn})\text{O} \cdot \text{Fe}_2\text{O}_3$
11. Fulminating gold — $\text{Au N}_2\text{H}_3$
12. Fusion mixture — A mixture of Na_2CO_3 and K_2CO_3
13. Fischer's salt — $\text{K}_3[\text{Co}(\text{NO}_2)_6]$

G

1. Galena — PbS
2. Garnierite — $\text{NiMg SiO}_3 \cdot \text{H}_2\text{O}$ An ore of Ni containing hydrated silicates of Ni and Mg
3. Germanite — GeO_2
4. German silver — An alloy of Cu, Zn and Ni
5. Gibbsite — $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$
6. Glauber's salt — $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$
7. Golden spangles — PbI_2
8. Grahm's salt — $(\text{NaPO}_3)_n$

9. Green vitriol — $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
10. Guigret's green — $\text{Cr}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$
11. Gun cotton — Nitro cellulose
12. Gun metal — An alloy of Cu, Zn, Sn
13. Gun powder — A mixture of KNO_3 , charcoal and sulphur
14. Gypsum — $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

H

1. Haematite (red) — Fe_2O_3
2. Haematite (brown) — $\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$
3. Hausmanite — Mn_3O_4
4. Heavy spar — BaSO_4
5. Hemimorphite — $\text{Zn}_3(\text{Sb}_2\text{O}_7)\text{Zn}(\text{OH})_2 \cdot \text{H}_2\text{O}$
6. Holme's signal — Signal produced by calcium phosphide and carbide
7. Horn silver — AgCl
8. Hydrolith — CaH_2
9. Hydroxyapatite — $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$
10. Hypo — $\text{Na}_2\text{S}_2\text{O}_3$
11. Hyponitrous acid — $\text{H}_2\text{N}_2\text{O}_2$
12. Hypophosphoric acid — $\text{H}_4\text{P}_2\text{O}_6$
13. Hypophosphorous acid — H_3PO_2

I

1. Icelandspar — CaCO_3
2. Iron pyrites — FeS_2
3. Indian salt peter — KNO_3
4. Inorganic benzene — $\text{B}_3\text{N}_3\text{H}_6$
5. Inorganic graphite — BN
6. Invar — An alloy containing 64% Fe and 36% Ni
7. Ilmenite — FeOTiO_2
8. Iron bugg — Hydrated Fe_2O_3 used as a dye.

J

1. Jadeite — $\text{Na Al}(\text{SiO}_3)_2$
 2. Jasper — A hard silicious clay used as precious stone

K

1. Kainite — $\text{KCl} \cdot \text{MgSO}_4 \cdot \text{MgCl}_2 \cdot 3\text{H}_2\text{O}$
 2. Kaolin or Kaolinite — $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ or $\text{Al}_2(\text{OH})_4 \text{Si}_2\text{O}_5$
 3. Kali — German word for potash
 4. Kings yellow — $\text{As}_2\text{S}_3 + \text{As}_2\text{O}_3$ used as a pigment
 5. Kernite — $\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$
 6. Kieserite — $\text{MgSO}_4 \cdot \text{H}_2\text{O}$
 7. Kupfer nickel — An alloy of Ni and As
 8. Kieselguhr — Porous clay used as adsorbent and filler for dynamite

L

1. Lanakite — $\text{PbO} \cdot \text{PbSO}_4$
 2. Lapis Lazuli — sodium aluminosilicate
 3. Laughing gas — N_2O
 4. Lead shot — Alloy of Pb and As
 5. Lepidolite — $\text{Si}_3\text{O}_9 \text{Al}_2(\text{Li};\text{K})_2(\text{F},\text{OH})_2$
 6. Lignite — coal containing about 67% C
 7. Limestone — CaCO_3
 8. Limonite — $\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$
 9. Litharge — PbO ; Lithia — Li_2O
 10. Lithopone — $\text{ZnS} + \text{BaSO}_4$
 11. Lunar caustic — Ag NO_3
 12. Lienar salt petre — $\text{NH}_4\text{NO}_3 + (\text{NH}_4)_2\text{SO}_4$

M

1. Maddrell's salt — $(\text{NaPO}_3)_n$
 2. Magnalium — An alloy having 90% Al and 10% Mg
 3. Magnesia — MgO

4. Magnesia alba — $[\text{Mg CO}_3]_x [\text{Mg(OH)}_2]_y \cdot z \text{H}_2\text{O}$
5. Magnesia cement — $\text{MgCl}_2 \cdot 5\text{MgO} \cdot x\text{H}_2\text{O}$
6. Magnesite — MgCO_3
7. Magnetite — Fe_3O_4
8. Malachite — $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
9. Marshall's acid — $\text{H}_2\text{S}_2\text{O}_8$
10. Massicot — PbO
11. Metaphosphoric acid — $(\text{HPO}_3)_n$
12. Mica — $\text{KH}_2\text{Al}_2(\text{SiO}_4)_3$
13. Microcosmic salt — $\text{Na}(\text{NH}_4)\text{HPO}_4$
14. Millerite — NiS
15. Minium — Pb_3O_4
16. Mohr's salt — $\text{FeSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$
17. Molybdenite — MoS_2
18. Monazite sands — contain phosphates of Th, Ce, Nd, Pr, La
19. Monel Metal — An alloy having 67% Ni, 30% Cu and 3% Fe
20. Mosaic gold — SnS_2
21. Muniz metal — A brass having 60% Cu, 40% Zn
22. Muriate of potash — KCl
23. Muriatic acid — HCl
24. Mischmetal — Alloys of lanthanides with other metals

N

1. Natron — $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
2. Natural gas — A gas mixture having 85% CH_4 , 9% C_2H_6 and 3% C_3H_8
3. Nessler's reagent — K_2HgI_4
4. Nichrome — An alloy having 60% Ni, 25% Fe and 15% Cr
5. Nickeloy — An alloy having 95% Al, 4% Cu, 1% Ni
6. Nitre cake — NaHSO_4
7. Nitrolim — $\text{CaCN}_2 + \text{C}$
8. Norwegian saltpeter — $\text{Ca}(\text{NO}_3)_2 \cdot \text{CaO}$

O

1. Oil gas — A mixture of hydrocarbons obtained by cracking of kerosene oil
2. Oil of vitriol — H_2SO_4 ; Oxone— Na_2O_2
3. Oleum — $\text{H}_2\text{S}_2\text{O}_7$
4. Olivine — Mg_2SiO_4
5. Oxymuriate of tin — $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$
6. Oxycyanogen — $(\text{OCN})_2$

P

1. Paris green — $\text{Cu}(\text{CH}_3\text{COO})_2$
2. Pearl ash — K_2CO_3
3. Pearl white — BiOCl
4. Peat — Coal containing about 60% carbon
5. Peerwhite — SbOCl
6. Pentalandite — Sulphides of Cu, Fe and Ni containing about 22% Ni
7. Perhydrol — H_2O_2
8. Perm alloy — An alloy containing 21% Fe, 78% Ni
9. Permutit — $\text{Na}_2\text{Al}_2\text{Si}_2\text{O}_8 \cdot x\text{H}_2\text{O}$
10. Pernitric acid — HNO_4
11. Pewter alloy — An alloy containing 80% Sn and 20% Pb
12. Pharaoh's serpents — $\text{Hg}(\text{CNS})_3$
13. Phenacite — Be_2SiO_4
14. Philosopher's wool — ZnO
15. Phosphatic rock — $\text{Ca}_3(\text{PO}_4)_2$
16. Phosphorite — $\text{Ca}_3(\text{PO}_4)_2$
17. Pink salt — $(\text{NH}_4)_2\text{SnCl}_6$
18. Pitch blende — A mineral of U containing a little of Ra
19. Polyhalite — $\text{K}_2\text{SO}_4 \cdot \text{MgSO}_4 \cdot \text{CaSO}_4 \cdot 6\text{H}_2\text{O}$

Q

1. Quartz — SiO_2
2. Quick lime — CaO
3. Quick silver — Hg

R

1. Realgar — As_4S_4
2. Red lead — Pb_3O_4
3. Rock salt — NaCl
4. Roled gold — An alloy having 95% Cu and 5% Al
5. Roschelle salt — sod. pot tartarate
6. Rose metal — An alloy of 50% Bi, 28% Sn and 22% Pb
7. Rubies — Al_2O_3
8. Ruby copper — Cu_2O
9. Ruby silver — Ag_2S
10. Rutile — TiO_2

S

1. Sal ammoniac — NH_4Cl
2. Sal volatile — $(\text{NH}_4)_2\text{CO}_3$
3. Salt cake — Na_2SO_4
4. Salt peter — KNO_3

NEET (level-II)

1. Sapphires — Al_2O_3
2. Schenite — $\text{K}_2\text{SO}_4 \cdot \text{MgSO}_4 \cdot 6\text{H}_2\text{O}$
3. Schwertzer reagent — $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ reagent used for dissolving cellulose
4. Seidlitz powder — NaHCO_3
5. Selenocyanogen — $(\text{SeCN})_2$
6. Siderite — FeCO_3
7. Silver glance — Ag_2S
8. Smallite — An ore of Ni
9. Soda ash — Na_2CO_3
10. Soda bleach — A mixture of Na_2O_2 and dil. HCl
11. Soda Feldspar — $\text{NaAlSi}_3\text{O}_8$
12. Sodium Xenate — Na_4XeO_6
13. Solder — An alloy of 67% Sn and 33% Pb
14. Sorrel's cement — $\text{MgCl}_2 \cdot 5\text{MgO} \cdot x\text{H}_2\text{O}$
15. Spathic iron ore — FeCO_3
16. Spelter — Impure Zn
17. Spodumene — $\text{Li Al}(\text{SiO}_3)_2$
18. Stalactite — CaCO_3
19. Stalagmite — CaCO_3
20. Steam coal — Coal containing 93% C
21. Sterling silver — solution of Cu in Ag
22. Stibine — SbH_3
23. Stibnite — Sb_2S_3
24. Strontia — SrO
25. Sugar of lead — $\text{Pb}(\text{CH}_3\text{COO})_2$
26. Super halogen — F_2
27. Sylvanite — AgAuTe_2
28. Sylvine — KCl
29. Spiegeleisen — An alloy of Fe, Mn, C used in the manufacture of steel.

T

1. Tialc — $\text{Mg}_2(\text{Si}_2\text{O}_5)_2 \cdot \text{Mg}(\text{OH})_2$
2. Tellurocyanogen — $(\text{TeCN})_2$
3. Termolita — $\text{Ca}_2\text{Mg}_8\text{Si}_4\text{O}_{11}(\text{OH})_2$
4. Thermite — Fe_2O_3 and Al mixture
5. Thiocyanogen — $(\text{SCN})_2$
6. Thomas slag — $\text{Ca}_3(\text{PO}_4)_2$ and CaSiO_3 , a by-product of steel industry
7. Thoria — ThO_2
8. Thortevitite — $\text{Sc}_2(\text{Si}_2\text{O}_7)$
9. Tincal — Borax, $\text{Na}_2\text{B}_4\text{O}_7$
10. Triphyllite — $(\text{Li}, \text{Na})\text{PO}_4(\text{Fe}, \text{Mn})_3(\text{PO}_4)_2$
11. Trona — $\text{Na}_2\text{CO}_3 \cdot 2\text{NaHCO}_3 \cdot 3\text{H}_2\text{O}$
12. Tungsten steel — An alloy of 94% Fe and 6% W
13. Turnbull's blue — $\text{Fe}_3[\text{Fe}(\text{CN})_6]_2$
14. Turquoise — $\text{AlPO}_4 \cdot \text{Al}(\text{OH})_3 \cdot \text{H}_2\text{O}$
15. Type metal — An alloy of 82% Pb, 15% Sb and 3% Sn
16. Tridymite : A form of quartz.

U

1. Ultramarine — $\text{Na}_6\text{Al}_3\text{Si}_2\text{S}_3\text{O}_{12}$
2. Urainite — UO_2

V

1. Verdigris — Green layer containing $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ and $\text{CuSO}_4 \cdot \text{Cu}(\text{OH})_2 \cdot \text{H}_2\text{O}$ and some $\text{CuCl}_2 \cdot \text{Cu}(\text{OH})_2$
2. Veridian — Cr_2O_3
3. Vermallic, Vermillion red — HgS

W

1. Wackenroder's liquid — Solution of H_2S in the aqueous solution of SO_2
2. Wallastonite — $\text{Ca}_3\text{Si}_3\text{O}_9$

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3. Washing Soda — $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
4. Water glass — Na_2SiO_3 , Soda Silicate
5. White lead — $2\text{PbCO}_3 \cdot \text{Pb}(\text{OH})_2$
6. White Vitriol — $\text{Zn SO}_4 \cdot 7\text{H}_2\text{O}$
7. Wilkinson's catalyst — $[(\text{C}_6\text{H}_5)_3\text{P}]_3\text{Rh Cl}$
8. Willemite — Zn_2SiO_4
9. Witherite — BaCO_3
10. Wolframite — FeWO_4
11. Wood's metal — A fusible alloy containing cadmium

Y

1. Y-alloy — An alloy of Cu and Al

Z

1. Zeigler-Natta Catalyst- $\text{R}_3\text{Al} + \text{TiCl}_4$
2. Zeise's salt — $\text{K}[\text{Pt Cl}_3 (\text{n}^2 - \text{C}_2\text{H}_4)]$
3. Zeolite — Hydrated sodium aluminium silicate
4. Zinc blende — ZnS
5. Zincite — ZnO
6. Zircon — ZrSiO_4

SECTION - A

Objective Type Questions

(Occurrence of metals and thermodynamical principles of metallurgy)

1. A substance which reacts with gangue to form fusible material is called
 - (1) Flux
 - (2) Catalyst
 - (3) Ore
 - (4) Slag
2. Cyanide process is used for the extraction of
 - (1) Au
 - (2) Cu
 - (3) Zn
 - (4) Fe
3. Calcination is the process in which
 - (1) Heating the ore in presence of air
 - (2) Heating the ore in absence of air
 - (3) Heating in vacuum
 - (4) Heating of ore in presence of N_2
4. Which of the following is not a concentration technique?
 - (1) Levigation
 - (2) Froth- flotation
 - (3) Leaching
 - (4) Calcination
5. The ores that are concentrated by Froth flotation method are
 - (1) Carbonate
 - (2) Sulphides
 - (3) Oxides
 - (4) Phosphates
6. In blast furnace, iron oxide is reduced by
 - (1) Silica
 - (2) CO
 - (3) H_2S
 - (4) Lime stone
7. The silver complex formed during cyanide process is
 - (1) $Na_2[Ag(CN)]$
 - (2) $Na[AgCN]$
 - (3) $Na_2[Ag(CN)_2]$
 - (4) $Na[Ag(CN)_2]$

8. Zincite and calamine respectively are
 - (1) Oxide and carbonate ore of Zn
 - (2) Carbonate and oxide ore of Zn
 - (3) Oxide and sulphate ore of Zn
 - (4) Sulphate and sulphite ore of Zn
 9. Which of the following is chalcopyrite?
 - (1) $CuFeS_2$
 - (2) FeS_2
 - (3) $KMgCl_3 \cdot 6H_2O$
 - (4) $Al_2O_3 \cdot 2H_2O$
 10. The alloy used in dental filling contains
 - (1) Ag and Sn
 - (2) Ag and Sb
 - (3) Hg, Ag and Sn
 - (4) Hg, Ag and Sb
 11. What is the slag formed from P_2O_5 impurity in metallurgy of iron?
 - (1) $Ca_3(PO_4)_2$
 - (2) $CaSiO_3$
 - (3) $Fe_3(PO_4)_2$
 - (4) $FeSiO_3$
 12. Which of the following oxide is thermally least stable?
 - (1) CaO
 - (2) Al_2O_3
 - (3) Fe_2O_3
 - (4) Ag_2O
 13. Thomas slag is
 - (1) Calcium silicate
 - (2) Anode mud
 - (3) $FeSiO_3$
 - (4) Calcium phosphate
- (Electrochemical principles of metallurgy)**
14. Which of the following metal can be extracted without using reducing agent?
 - (1) Sn
 - (2) Pb
 - (3) Fe
 - (4) Both (1) & (2)
 15. Which of the following metal is extracted by using coke and carbon monoxide as reducing agent?
 - (1) Na
 - (2) Cu
 - (3) Fe
 - (4) Al
 16. Which of the following metal is extracted by the use of cyanide solution?
 - (1) Pb
 - (2) Zn
 - (3) Mn
 - (4) Ag

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17. Electrolytic reduction method is used for extraction of
(1) Highly electronegative elements
(2) Transition metals
(3) Highly electropositive elements
(4) Metalloids
18. Which of the following metals cannot be extracted by carbon reduction process?
(1) Pb (2) Al
(3) Hg (4) Zn
19. What will happen, if anode is made of nickel instead of graphite in the extraction of aluminium from AlCl_3 ?
(1) Nickel will be affected by high temperature
(2) Nickel will combine with Cl_2
(3) Nickel is insulator
(4) All of these
20. When molten NaCl is electrolysed by using inert electrode, the product obtained at cathode is
(1) Na (2) Cl_2
(3) H_2 (4) Na-Hg amalgam
21. Which of the following give respective metal by self reduction?
(1) Galena PbS (2) HgS
(3) ZnS (4) Both (1) & (2)
22. Which of the following statement is incorrect?
(1) Al_2O_3 cannot be reduced into Al by Cr_2O_3
(2) Ca is stronger reducing agent than Mg
(3) At 673 K, CO is poor reducing agent than carbon
(4) All of these
23. By which process zinc is extracted from zinc blende?
(1) Electrolytic reduction
(2) Roasting followed by reduction with carbon
(3) Calcination followed by reduction with carbon
(4) Roasting followed by self reduction
- (Refining)
24. Which of the following is not a refining process?
(1) Mond's process (2) van-Arkel process
(3) Poling (4) Leaching
25. From gold amalgam, gold may be recovered by
(1) Distillation (2) Oxidation
(3) Electrolytic refining (4) Dissolving in HNO_3

SECTION - B

Previous Years Questions

1. Identify the correct statement from the following [NEET-2020 (Phase-1)]
(1) Blister copper has blistered appearance due to evolution of CO_2 .
(2) Vapour phase refining is carried out for Nickel by van Arkel method.
(3) Pig iron can be moulded into a variety of shapes.
(4) Wrought iron is impure iron with 4% carbon.
2. Match the elements in Column I with methods of purification in Column II. [NEET-2020 (Phase-2)]
- | 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)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
(2) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
(3) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
(4) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
3. Identify the incorrect statement.
(1) Gangue is an ore contaminated with undesired materials
(2) The scientific and technological process used for isolation of the metal from its ore is known as metallurgy
(3) Minerals are naturally occurring chemical substances in the earth's crust
(4) Ores are minerals that may contain a metal
- [NEET-2019 (Odisha)]
4. Which one is malachite from the following? [NEET-2019]
(1) CuFeS_2 (2) $\text{Cu}(\text{OH})_2$
(3) Fe_3O_4 (4) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
5. Considering Ellingham diagram, which of the following metals can be used to reduce alumina? [NEET-2018]
(1) Fe (2) Zn
(3) Cu (4) Mg
6. Extraction of gold and silver involves leaching with CN^- ion. Silver is later recovered by [NEET-2017]
(1) Liquation (2) Distillation
(3) Zone refining (4) Displacement with Zn

Match items of **Column I** with the items of **Column II** and assign the correct option:

	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

[NEET-2016]

- (1) a(iii), b(iv), c(v), d(i) (2) a(iv), b(ii), c(iii), d(i)
 (3) a(ii), b(iii), c(i), d(v) (4) a(i), b(ii), c(iii), d(iv)
- b. Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of

[AIPMT (Prelims)-2012]

- (1) $\text{Al}_2\text{O}_3 + \text{Na}_3\text{AlF}_6 + \text{CaF}_2$
 (2) $\text{Al}_2\text{O}_3 + \text{KF} + \text{Na}_3\text{AlF}_6$
 (3) $\text{Al}_2\text{O}_3 + \text{HF} + \text{NaAlF}_4$
 (4) $\text{Al}_2\text{O}_3 + \text{CaF}_2 + \text{NaAlF}_4$
9. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with

[AIPMT (Prelims)-2012]

- (1) Iron sulphide (FeS)
 (2) Carbon monoxide (CO)
 (3) Copper (I) sulphide (Cu_2S)
 (4) Sulphur dioxide (SO_2)
10. Identify the alloy containing a non-metal as a constituent in it

[AIPMT (Prelims)-2012]

- (1) Bell metal (2) Bronze
 (3) Invar (4) Steel
11. Which one of the following is a mineral of iron ?

[AIPMT (Prelims)-2012]

- (1) Pyrolusite (2) Magnetite
 (3) Malachite (4) Cassiterite
12. Which of the following pairs of metals is purified by van Arkel method?

[AIPMT (Prelims)-2011]

- (1) Ni and Fe (2) Ga and In
 (3) Zr and Ti (4) Ag and Au
13. Which of the following elements is present as the impurity to the maximum extent in the pig iron?

[AIPMT (Prelims)-2011]

- (1) Phosphorus (2) Manganese
 (3) Carbon (4) Silicon

14. 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

[AIPMT (Mains)-2011]

- (1) $\text{CaO}(s) + \text{SiO}_2(s) \rightarrow \text{CaSiO}_3(s)$
 (2) $2\text{C}(s) + \text{O}_2(g) \rightarrow 2\text{CO}(g)$
 (3) $\text{Fe}_2\text{O}_3(s) + 3\text{CO}(g) \rightarrow 2\text{Fe}(l) + 3\text{CO}_2(g)$
 (4) $\text{CaCO}_3(s) \rightarrow \text{CaO}(s) + \text{CO}_2(g)$

15. Match List-I (substances) with List-II (process) employed in the manufacture of the substances and select the correct option

	List - I (Substances)	List - II (Processes)
a.	Sulphuric acid	(i) Haber's process
b.	Steel	(ii) Bessemer's process
c.	Sodium hydroxide	(iii) Leblanc process
d.	Ammonia	(iv) Contact process

[AIPMT (Mains)-2010]

- (1) a(i), b(iv), c(ii), d(iii) (2) a(i), b(ii), c(iii), d(iv)
 (3) a(iv), b(iii), c(ii), d(i) (4) a(iv), b(ii), c(iii), d(i)
16. Which of the following statements, about the advantage of roasting sulphide ore before reduction is not true?

[AIPMT (Prelims)-2007]

- (1) Roasting of the sulphide to the oxide is thermodynamically feasible
 (2) Carbon and hydrogen are suitable reducing agents for metal sulphides
 (3) The $\Delta_f G^\circ$ of the sulphide is greater than those for CS_2 and H_2S
 (4) The $\Delta_f G^\circ$ is negative for roasting of sulphide ore to oxide

17. Sulphides ores of metals are usually concentrated by Froth Floatation process. Which one of the following sulphides ores offers an exception and is concentrated by chemical leaching ?

[AIPMT (Prelims)-2007]

- (1) Sphalerite (2) Argentite
 (3) Galena (4) Copper pyrite
18. The mass of carbon anode consumed (giving only carbon dioxide) in the production of 270 kg of aluminium metal from bauxite by the Hall process is (Atomic mass Al= 27)

[AIPMT (Prelims)-2005]

- (1) 180 kg (2) 270 kg
 (3) 540 kg (4) 90 kg

- Questions asked Prior to Medical Ent. Exams. 2005**
19. In which of the following process fused sodium chloride is electrolysed for extraction of sodium?
 - (1) Castner process
 - (2) Cyanide process
 - (3) Down's process
 - (4) Both (2) & (3)
 20. Which of the following does not contain aluminium?
 - (1) Cryolite
 - (2) Fluorspar
 - (3) Feldspar
 - (4) Mica
 21. Which of the following does not contain Mg?
 - (1) Magnetite
 - (2) Asbestos
 - (3) Magnesite
 - (4) Carnalite
 22. Carborundum is
 - (1) CaC_2
 - (2) CaCO_3
 - (3) Fe_3C
 - (4) SiC
 23. Bessemer converter is used for manufacture of
 - (1) Steel
 - (2) Wrought iron
 - (3) Pig iron
 - (4) Cast iron
 24. Mond's process is used for
 - (1) Ni
 - (2) Al
 - (3) Fe
 - (4) Cu
 25. Which process of purification is represented by following scheme?
- $$\text{Ti} + 2\text{I}_2 \xrightarrow[(\text{Impure})]{250^\circ\text{C}} \text{TiI}_4 \xrightarrow[(\text{Pure})]{1400^\circ\text{C}} \text{Ti} + 2\text{I}_2$$
- (1) Poling
 - (2) Electro refining
 - (3) Zone refining
 - (4) van Arkel process
26. Which of the following sulphides when heated strongly in air gives the corresponding metal?
 - (1) CuS
 - (2) Fe_2S_3
 - (3) FeS
 - (4) HgS
 27. Most important ore of tin is
 - (1) Cassiterite
 - (2) Cryolite
 - (3) Malachite
 - (4) All of these
 28. Heating of ore in presence of air to remove sulphur impurities is called
 - (1) Calcination
 - (2) Roasting
 - (3) Smelting
 - (4) None of these
 29. Sodium is extracted from
 - (1) NaCl(aq)
 - (2) NaCl(l)
 - (3) NaOH(aq)
 - (4) $\text{NaNO}_3\text{(aq)}$

30. Among the metals, the one that cannot be obtained by reduction of its metal oxide
 - (1) Cr
 - (2) Fe
 - (3) Mn
 - (4) Mg
31. Which of the following is used as depressant in separation of mixture of PbS and ZnS ?
 - (1) NaCN
 - (2) NaCl
 - (3) AgCl
 - (4) All of these
32. Which contains both iron and copper?
 - (1) Cuprite
 - (2) Chalcocite
 - (3) Chalcopyrite
 - (4) Malachite
33. To dissolve argentite ore which of the following is used?
 - (1) $\text{Na[Ag(CN)}_2]$
 - (2) NaCN
 - (3) NaCl
 - (4) HCl
34. Iron obtained from blast furnace is
 - (1) Wrought iron
 - (2) Cast iron
 - (3) Pig iron
 - (4) Steel
35. Elements used as semiconductor are purified by
 - (1) van Arkel method
 - (2) Mond process
 - (3) Distillation
 - (4) Zone refining
36. Which of the following oxide is least stable?
 - (1) CO_2
 - (2) CO
 - (3) MgO
 - (4) HgO
37. The inner layer of a blast furnace is made of
 - (1) Graphite bricks
 - (2) Silica bricks
 - (3) Basic bricks
 - (4) Fireclay bricks
38. Roasting of sulphides gives the gas X as a by-product. This is a colorless gas with choking smell of burnt sulphur and causes great damage to respiratory organs as a result of acid rain. Its aqueous solution is acidic acts as a reducing agent and its acid is known only in solution. The gas X is
 - (1) SO_2
 - (2) CO_2
 - (3) SO_3
 - (4) H_2S
39. Which of the following mineral contains calcium as well as magnesium?
 - (1) Tridymite
 - (2) Aragonite
 - (3) Dolomite
 - (4) Carnalite



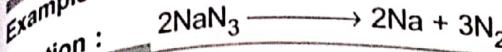
Example 1 : Though nitrogen exhibits +5 oxidation state, it does not form pentahalide. Give reason.

Solution : Nitrogen has s and p orbitals only. As it does not have d orbital to expand its covalency beyond four.

Example 2 : PH₃ has lower boiling point than NH₃. Why?

Solution : Unlike NH₃, PH₃ is not associated through hydrogen bonding in liquid state.

Example 3 : Write reaction of thermal decomposition of sodium azide.



Example 4 : Why does NH₃ act as lewis base?

Solution : Nitrogen atom in NH₃ has one lone pair of electron which is available for donation, hence Lewis base.

Example 5 : Why does NO₂ dimerise?

Solution : NO₂ contains odd number of valence electron. On dimerisation it gets converted to stable N₂O₄ with even number of electrons.

Try Yourself

1. Why pentahalide is more covalent than trihalide?
2. Why is BiH₃ the strongest reducing agent among hydrides of Group 15 elements?
3. Why is N₂ less reactive at room temperature?
4. Mention the conditions required to maximise the yield of ammonia.
5. How does ammonia react with a solution of Cu²⁺?
6. What is the covalency of nitrogen in N₂O₅?

NITRIC ACID

Nitrogen forms oxoacids such as :

H₂N₂O₂ (Hyponitrous acid), HNO₂ (Nitrous acid) and HNO₃ (Nitric acid).

HNO₃ is the most important.

Preparation

- In laboratory HNO₃ prepared by heating KNO₃ or NaNO₃ and conc. H₂SO₄ in glass retort.



- Large scale (by Ostwald's process)

- (i) Based on catalytic oxidation of NH₃ by atmospheric oxygen.

