

NON-FERROUS METALLURGY (MCQ QUESTIONS)

Er. BHAGYASHREE BAL

Lect. In Metallurgy

DIPLOMA

Department of Metallurgical Engineering



ORISSA SCHOOL OF MINING ENGINEERING, KEONJHAR

A Government of Odisha institution with National Repute
Established in the Year 1956 (Approved by AICTE, New Delhi &
Affiliated to SCTE&VT, Odisha, BBSR)

Non-Ferrous Metallurgy

5th Semester

1. Which of the following operations use physical means to yield a product enriched in the metal bearing mineral?
 - (a) Hydrometallurgy.
 - (b) Pyrometallurgy.
 - (c) Electrometallurgy.
 - (d) Mineral dressing.
2. In which of the following processes, the chemical combination between the metal sought and other elements is not broken up?
 - (a) Mineral dressing
 - (b) Hydrometallurgy
 - (c) Pyrometallurgy
 - (d) Electrometallurgy.
3. Which one occupies the lowermost position in the electromotive series of metals?
 - (a) Aluminium.
 - (b) Alkali metals (*e.g.*, K, Na, Li),
 - (c) Noble metals (Ag, Pt, Au).
 - (d) Zinc.
4. The metals occurring at the lowermost position in electromotive series
 - (a) do not resist corrosion.
 - (b) resist corrosion very strongly.
 - (c) are very brittle.
 - (d) are heat insulators.
5. Oxides of which of the following metals in electromotive series are not reducible by carbon in fuel fired furnaces?
 - (a) Ag & Hg
 - (b) Cu & Sn
 - (c) Pb & Fe
 - (d) Zn & Cr
6. Oxides of which of the following metals decompose by heat alone?
 - (a) Ag & Hg
 - (b) Cu & Sn
 - (c) Pb & Fe
 - (d) Zn & Cr
7. Which of the following does not offer an effective protective coating against corrosion of iron (as being evident from electromotive series of metals)?
 - (a) Zinc
 - (b) Chromium
 - (c) Tin
 - (d) Nickel
8. Electromotive series of metals helps in
 - (a) deciding the mode of its extraction from ore.
 - (b) classifying the metals into different groups based on their reactivity towards oxygen, water etc.
 - (c) both (a) & (b).
 - (d) neither (a) nor (b).

Answers

- | | | | |
|--------|--------|--------|--------|
| 1. (d) | 2. (a) | 3. (c) | 4. (b) |
| 7. (d) | 8. (c) | 5. (a) | 6. (a) |

9. Which of the following metals occurs in nature in their free metallic state?
 (a) Au & Ag (b) Pb & Zn
 (c) Cu & Ni (d) none of these
10. Extraction of which of the following metals is the most expensive?
 (a) Fe (b) Au
 (c) Zn (d) Pb
11. Which of the following metals generally occurs in the form of oxides?
 (a) Sn (b) Cu
 (c) Pb (d) Zn
12. Which of the following metals generally occurs in the form of sulphides?
 (a) Fe (b) Sn
 (c) Al (d) Pb
13. Iron, tin & aluminium ores mostly occur in the form of
 (a) pyrites (b) sulphides
 (c) chlorides (d) oxides
14. Copper, lead & zinc ores mostly occur in the form of
 (a) oxides (b) carbonates
 (c) silicates (d) sulphides
15. Which is a metalliferous mineral?
 (a) Chalcopyrite (b) Calcite
 (c) Flourspar (d) Quartz
16. Which is non-metalliferous mineral?
 (a) Cassiterite (b) Chalcopyrite
 (c) Sphalerite (d) Flourspar
17. Chemical formula of chalcopyrite is
 (a) $\text{Cu}_2\text{S} \cdot \text{Fe}_2\text{S}_3$ (b) $\text{Cu}_2\text{S} \cdot \text{FeS}$
 (c) SnO_2 (d) CaF_2
18. Chemical formula of cassiterite is
 (a) ZnS (b) SnO_2
 (c) CaF_2 (d) SiO_2
19. Chemical formula of calcite is
 (a) CaF_2 (b) CaCO_3
 (c) $\text{Cu}_2\text{S} \cdot \text{Fe}_2\text{S}_3$ (d) ZnS
20. Chemical formula of sphalerite is
 (a) ZnS (b) SnO_2
 (c) CaF_2 (d) ZnS
21. Chemical formula of flourspar is
 (a) CaF_2 (b) SiO_2
 (c) $\text{Cu}_2\text{S} \cdot \text{Fe}_2\text{S}_3$ (d) ZnS
22. Percentage of gangue is maximum in the ore of
 (a) iron (b) gold
 (c) zinc (d) copper
23. Percentage metal in extractable ore is minimum in case of the.....ore.
 (a) copper (b) iron
 (c) gold (d) zinc
24. Function of flux in extractive metallurgy is to
 (a) chemically combine with the gangue.
 (b) make the gangue fusible.
 (c) produce a new compound fusible at a temperature lower than that at which the gangue alone or flux alone would fuse.
 (d) all (a), (b) & (c).
25. With increase in the gangue content of the ore increases.
 (a) flux requirement
 (b) smelting time
 (c) smelting furnace size requirement
 (d) all (a), (b) & (c).

Answers

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|---------|---------|---------|---------|---------|---------|
| 9. (d) | 10. (b) | 11. (a) | 12. (d) | 13. (d) | 14. (d) |
| 15. (a) | 16. (d) | 17. (a) | 18. (b) | 19. (b) | 20. (a) |
| 21. (a) | 22. (b) | 23. (c) | 24. (d) | 25. (d) | |

26. Metallic ores are subjected to physical methods of gangue removal before smelting mainly to
 (a) reduce the cost of metal extraction,
 (b) get high purity metals.
 (c) get high quality metals.
 (d) get metals with good workability.
27. Fe content in Indian iron ore is aboutpercent.
 (a) 20-25 (b) 40-45
 (c) 60-65 (d) 90-95
28. Iron oxides percentage in Indian iron ore is about
 (a) 20-25 (b) 40-45
 (c) 60-65 (d) 90-95
29. Which method of metal extraction is applied to the metalliferous ores?
 (a) Hydrometallurgical
 (b) Pyrometallurgical
 (c) Electrometallurgical
 (d) All (a), (b) & (c)
30. The metals which stand higher in the electrochemical series (i.e. alkali & alkaline earth metals.) are usually extracted by the method.
 (a) hydrometallurgical
 (b) pyrometallurgical
 (c) electrometallurgical
 (d) all (a), (b) & (c)
31. Gold ores and most of the silver ores are normally subjected to method of metal extraction.
 (a) hydrometallurgical
 (b) pyrometallurgical
 (c) electrometallurgical
 (d) none of these
32. Which is the cheapest method of metal extraction?
 (a) Hydrometallurgical.
 (b) Pyrometallurgical.
 (c) Electrometallurgical.
 (d) All are equally cheap.
33. Pyrometallurgical method of metal extraction is a/an.....method.
 (a) dry (b) wet
 (c) electrolytic (d) none of these
34. Leaching of ore is done in the method of metal extraction.
 (a) pyrometallurgical
 (b) hydrometallurgical
 (c) electrometallurgical
 (d) none of these
35. Roasting and smelting of ore is done in method of metal extraction.
 (a) hydrometallurgical
 (b) pyrometallurgical
 (c) electrometallurgical
 (d) none of these
36. Electrometallurgical method is widely employed for the extraction of
 (a) Al & Mg (b) Fe
 (c) Zn (d) Pb
37. Fluxes are most commonly
 (a) oxides minerals (b) metal oxides
 (c) metal sulphides (d) quartzitic materials
38. Melting point of slag is lower than that of
 (a) flux
 (b) gangue
 (c) both (a) & (b)
 (d) neither (a) nor (b)

Answers

26. (c)	27. (c)	28. (d)	29. (c)	30. (a)	31. (a)
32. (a)	33. (a)	34. (b)	35. (b)	36. (a)	37. (a)
38. (c)					

39. Decomposition of carbonates during calcination of dolomite, limestone & magnesite takes place at°C.
 (a) < 300 (b) > 500
 (c) > 800 (d) > 1100
40. Roasting of an ore is done to
 (a) fuse it without changing its chemical nature.
 (b) change the ore chemically by devolatilisation.
 (c) both (a) & (b).
 (d) neither (a) nor (b).
41. Which is the most common form of ore roasting?
 (a) Oxidising roasting
 (b) Chloridizing
 (c) Suspension roasting
 (d) Sulphatizing
42. Ore roasting in which the heat generated by the oxidation of sulphides is sufficient to propagate the reaction is called the
 (a) flash roasting
 (b) sulphatizing
 (c) blast roasting
 (d) autogenous roasting
43. Distillation is adopted in the treatment of
 (a) volatile metals.
 (b) zinc, cadmium & mercury.
 (c) both (a) & (b).
 (d) neither (a) nor (b).
44. Matte is
 (a) an intermediate product during metal extraction from sulphide rich ores.
 (b) produced when the gangue percentage in sulphide ore is very high.
 (c) a heterogeneous mixture of metallic sulphides in which the metallic contents are concentrated.
 (d) all (a), (b) & (c).
45. Matte is
 (a) brittle.
 (b) produced during extraction of copper & nickel.
 (c) blue or grey and lustre is bright.
 (d) all (a), (b) & (c).
46. Speiss is
 (a) heterogeneous mixture of two or more metals arsenides.
 (b) brittle.
 (c) formed when arsenical ores are smelted.
 (d) all (a), (b) & (c).
47. Secondary metals are those
 (a) resulting from refining of scraps.
 (b) resulting from reduction of their ores.
 (c) which are having high level of impurities.
 (d) which can be cold rolled.
48. The chemical composition of slag formed during metal extraction does not depend upon theof flux.
 (a) nature
 (b) amount
 (c) both (a) & (b)
 (d) neither (a) nor (b).
49. If the gangue in the ore to be fluxed is basic, then
 (a) an acid flux is required.
 (b) a basic flux is required.
 (c) either acid or basic flux will do.
 (d) its removal is very easy.

Answers

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|---------|---------|---------|---------|---------|---------|
| 39. (c) | 40. (b) | 41. (a) | 42. (d) | 43. (c) | 44. (d) |
| 45. (d) | 46. (d) | 47. (a) | 48. (d) | 49. (a) | |

50. The gangue material in ore consists of
 (a) acid components only.
 (b) basic components only.
 (c) both acid & basic components but the acid components generally predominate.
 (d) both acid & basic components but the basic components generally predominate.
51. Self fluxing ores are those
 (a) which do not need external flux.
 (b) in which acid & basic components are balanced.
 (c) both (a) & (b).
 (d) neither (a) nor (b).
52. Which is not an acid flux?
 (a) Sand (b) Gravel
 (c) Quartz rock (d) None of these
53. Depending upon the condition of the slag, which of the following is capable of acting both as an acid or a base?
 (a) Lime (b) Silica
 (c) Alumina (d) Magnesia
54. High MgO in slag
 (a) increases its viscosity.
 (b) lowers its fusion temperature.
 (c) eliminates the formation of dibasic silicates.
 (d) all (a), (b) & (c).
55. The main basic flux is
 (a) limestone and dolomite.
 (b) quartz and sand.
 (c) alumina and gravel.
 (d) magnesia and silica.
56. Neutral fluxes
 (a) do not increase the acidity or basicity of the slag.
 (b) make slag more fluid by forming double and easily fusible salts.
 (c) are exemplified by fluorspar (CaF_2).
 (d) all (a), (b) & (c).
57. Which of the following is an undesirable property of slag?
 (a) Low fluidity & fusibility
 (b) Low density
 (c) Poor heat conductivity
 (d) High chemical activity and solvent poor for impurities.
58. Main flux used in smelting of tin is
 (a) limestone
 (b) silica
 (c) manganese ore
 (d) fluorspar
59. Cinder is
 (a) same as slag.
 (b) a fused mass formed by the action of flux on the gangue of the ore and fuel.
 (c) a product resulting from the interaction of acid & basic oxides of high melting points.
 (d) all (a), (b) & (c).
60. Pick out the wrong statement.
 (a) In pyrometallurgy, all reduced elements join the metal and all oxidised ones go to form slag.
 (b) The hearth temperature of blast furnace can be regulated by adjusting the slag composition,
 (c) The slag furnishes a means for sulphur removal in iron blast furnace.
 (d) none of these.

Answers

50. (c)	51. (c)	52. (d)	53. (c)	54. (b)	55. (a)
56. (d)	57. (a)	58. (a)	59. (d)	60. (d)	

61. Low specific gravity of slag is desirable mainly due to the fact that, it
 (a) permits clean and better separation from metal/matte.
 (b) makes the slag more fluid.
 (c) protects the metal from overheating due to poor heat conductivity.
 (d) is more fusible.
62. Flux required in Bessemerising of copper matte is
 (a) acid flux
 (b) basic flux
 (c) neutral flux
 (d) none, as it is selffluxing
63. Slags are used for
 (a) cement making.
 (b) fertiliser production.
 (c) insulation & railroad ballast.
 (d) all (a), (b) & (c).
64. Copper is not
 (a) ductile.
 (b) malleable.
 (c) a very good conductor of heat & electricity.
 (d) none of these.
65. Presence of high quantity of impurities (like arsenic, antimony, oxygen, bismuth etc.) in copper greatly affects its
 (a) thermal conductivity
 (b) electrical conductivity
 (c) tensile strength
 (d) all (a), (b) & (c)
66. Presence of high% of oxygen in copper (0.05% O₂ is considered desirable) increases its
 (a) brittleness
 (b) ductility
 (c) both (a) & (b)
 (d) neither (a) nor (b)
67. Presence of arsenic in copper greatly reduces its
 (a) electrical conductivity.
 (b) tenacity & hardness.
 (c) malleability & ductility.
 (d) none of these.
68. Presence of antimony in copper increases its
 (a) electrical conductivity
 (b) brittleness
 (c) both (a) & (b)
 (d) neither (a) nor (b).
69. Presence of bismuth in copper
 (a) causes brittleness.
 (b) renders it unsuitable for wire-drawing,
 (c) both (a) & (b).
 (d) neither (a) nor (b).
70. Copper is used for the
 (a) manufacture of electric transmission cable.
 (b) alloy making.
 (c) sheet, plate, rod & tube making.
 (d) all (a), (b) & (c).
71. Which of the following is an oxide ore of copper?
 (a) Chalcocite (b) Chalcopyrite
 (c) Malachite (d) Bornite
72. Which of the following is a sulphide ore of copper?
 (a) Cuprite (b) Azurite
 (c) Malachite (d) None of these

Answers

61. (a)	62. (a)	63. (d)	64. (d)	65. (d)	66. (d)
67. (a)	68. (b)	69. (c)	70. (d)	71. (c)	72. (d)

73. Percentage of copper in pure mineral is maximum (about 89%) in
 (a) cuprite (b) chalcopryrite
 (c) chalcocite (d) malachite
74. Major Indian deposits of copper ore is in
 (a) Mosabani mines (Jharkhand)
 (b) Khetri (Rajasthan)
 (c) both (a) & (b)
 (d) neither (a) nor (b)
75. Copper percentage in Indian copper ore is about
 (a) 1-3 (b) 30-33
 (c) 60-64 (d) 85-89
76. Copper is extracted from its ore by the method.
 (a) pyrometallurgical
 (b) hydrometallurgical
 (c) both (a) & (b)
 (d) neither (a) nor (b)
77. More widely used process for extraction of metallic copper from its oxide ore is
 (a) by reduction smelting in blast furnace,
 (b) mixing it with sulphide ore and smelting the mixture in reverberatory furnace.
 (c) roasting it in blast furnace.
 (d) none of these.
78. Which of the following is not a pyrometallurgical operation involved in copper extraction from its sulphide ores ?
 (a) Roasting of concentrates and smelting of roasted product to matte.
 (b) Bessemerising of the matte.
 (c) Refining of blister copper.
 (d) None of these.
79. The main purpose of roasting sulphide copper ore is to
 (a) facilitate the existence of oxidising atmosphere in the reverberatory furnace.
 (b) eliminate some sulphur (by its oxidation to SO_2) from it.
 (c) produce copper rich (about 75%) matte.
 (d) all (a), (b) & (c).
80. Desirable percentage of copper in the matte resulting from smelting of sulphide copper ore is about
 (a) 10 (b) 40
 (c) 75 (d) 95
81. Grade of matte produced in a reverberatory furnace can be controlled by adjusting the
 (a) charge composition
 (b) smelting time
 (c) smelting temperature
 (d) none of these
82. A low grade matte
 (a) is rich in FeS .
 (b) is lean in Cu_2S .
 (c) requires large quantity of silica for fluxing.
 (d) all (a), (b) & (c).
83. In flash smelting process of copper extraction
 (a) no external fuel is required (preheated air and exothermic reactions serve as a source of heat).
 (b) high grade of matte is produced thereby-reducing blowing time in the converter,
 (c) smelting process is easier to control and has greater flexibility.
 (d) all (a), (b) & (c).
84. Fire refining of blister copper is done to produce copper.
 (a) tough
 (b) very high purity (99.99%)
 (c) very high electrical conductivity
 (d) electrolytic

Answers

73. (a)	74. (c)	75. (a)	76. (c)	77. (b)	78. (d)
79. (b)	80. (b)	81. (a)	82. (d)	83. (d)	84. (a)

85. Electrolytic refining of blister copper is done to produce copper with high
(a) purity (99.99%)
(b) electrical conductivity
(c) both (a) & (b)
(d) neither (a) nor (b).
86. Purity of copper produced by fire refining is about.....percent.
(a) 98.7 (b) 99.3
(c) 99.9 (d) 87.3
87. H_2SO_4 concentration in electrolyte used in refining of copper is about percent.
(a) 1-3 (b) 10 -16
(c) 46 -52 (d) 83 - 87 .
88. Precious metals like gold, silver & platinum are recovered in electrolytic refining of copper from the
(a) mud at the bottom of the electrolytic cell.
(b) spent electrolyte.
(c) both (a) & (b).
(d) neither (a) nor (b).
89. Hydrometallurgical method of copper extraction
(a) is applied to very poor oxidised ores.
(b) is the cheapest of all methods.
(c) involves crushing, washing, leaching & precipitation of ore.
(d) all (a), (b) & (c).
90. Which is the cheapest and the most common leaching chemical used in hydrometallurgical method of copper extraction from its oxide ores?
(a) Sulphuric acid
(b) Nitric acid
(c) Ammonium sulphate
(d) Brine
91. Of all the commercial metals, which is the most plentiful ?
(a) Copper (b) Aluminium
(c) Iron (d) Lead
92. Aluminium and its alloys are given excellent protection against corrosion by
(a) an anodising treatment.
(b) galvanising.
(c) lead coating.
(d) none of these.
93. Aluminium is produced by
(a) smelting its ore in a reverberatory furnace.
(b) electrolysis of a solution of alumina in fused cryolite (Na_3AlF_6).
(c) thermal decomposition of bauxite.
(d) none of these.
94. Alumina percentage in bauxite is about
(a) 10 (b) 25
(c) 60 (d) 90
95. Bauxite requirement to produce one ton of aluminium is about tons.
(a) 1.5 (b) 5.5
(c) 15.5 (d) 25.5
96. Melting point of pure alumina is..... $^{\circ}\text{C}$.
(a) 1300 (b) 1700
(c) >2000 (d) 3400
97. The most important requirement of an aluminium plant is the
(a) cheap & abundant electrical power supply.
(b) availability of high purity bauxite.
(c) availability of high purity alumina.
(d) lower melting point of alumina.

Answers

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|---------|---------|---------|---------|---------|---------|
| 85. (c) | 86. (b) | 87. (b) | 88. (a) | 89. (d) | 90. (a) |
| 91. (b) | 92. (a) | 93. (b) | 94. (c) | 95. (b) | 96. (c) |
| 97. (a) | | | | | |

98. Bayer's process is used for purifying
 (a) bauxite (b) alumina
 (c) aluminium (d) none of these
99. Main impurities in bauxite are
 (a) FeO, SiO₂ & TiO₂
 (b) CaSiO₃, MgSiO₃ & SiO₂
 (c) CaO, MgO & SiO₂
 (d) FeO, CaO & MgO.
100. In Bayer's process, powdered bauxite is digested (in a steam jacketed autoclave at 150°C for 2-4 hours) in
 (a) NaOH (b) NH₄Cl
 (c) H₂SO₄ (d) HCl
101. Lime added to bauxite during its digestion in Bayer's process
 (a) prevents the dissolution of silica.
 (b) causes the formation of insoluble calcium silicate.
 (c) prevents the loss of alumina.
 (d) all (a), (b) & (c).
102. Complete precipitation of Al(OH)₃ from sodium aluminate in settling tank (in Bayer's process) takes about..... hours.
 (a) 2 (b) 25
 (c) 60 (d) 72
103. Al(OH)₃ is converted to alumina (in Bayer's process) by
 (a) electrolysis (b) calcination
 (c) smelting (d) none of these
104. Bayer's process is suitable and economical, only when silica percentage of bauxite is
 (a) very high (b) <0.5
 (c) < 3 (d) > 5
105. Electric current used for conversion of calcined alumina to aluminium by electrolysis
 (a) keeps the electrolyte liquid by generation of heat.
 (b) causes electrolytic dissociation of alumina.
 (c) both (a) & (b).
 (d) neither (a) nor (b).
106. Conversion of calcined alumina to aluminium by electrolysis is done in a
 (a) carbon lined furnace.
 (b) concrete chamber.
 (c) wooden chamber.
 (d) stainless steel chamber.
107. Anode and cathode in the aluminium reduction cell are made respectively of
 (a) carbon and iron bar.
 (b) iron bar and carbon.
 (c) aluminium and carbon.
 (d) carbon and aluminium.
108. Reinforcement of annealed aluminium by steel core
 (a) increases its load carrying capacity.
 (b) does not affect its electrical conductivity.
 (c) facilitates its use for manufacture of cable and bus bar for transmission of electric power.
 (d) all (a), (b) & (c).
109. The most significant property of aluminium alloy is its
 (a) corrosion resistance.
 (b) high strength to weight ratio.
 (c) machinability without tearing.
 (d) ability for cold working.
110. Ageing of aluminium alloys causes increase in its
 (a) strength (b) hardness
 (c) both (a) & (b) (d) neither (a) nor (b).

Answers

98. (a)	99. (a)	100. (a)	101. (d)	102. (c)	103. (b)
104. (c)	105. (c)	106. (a)	107. (a)	108. (d)	109. (b)
110. (c)					

111. Tin can be severely cold worked without the necessity for annealing mainly due to its
 (a) high malleability.
 (b) high ductility.
 (c) low recrystallisation temperature.
 (d) high machinability.
112. Tin exists in.....allotropic forms.
 (a) 2 (b) 3
 (c) 4 (d) 5
113. Tin coating on metals is done by
 (a) hot-dipping
 (b) electro-deposition
 (c) spraying
 (d) all (a), (b) & (c)
114. Tin is used for
 (a) corrosion resistant coating of steel & copper alloys.
 (b) making soft solders.
 (c) alloy making (e.g. bronzes, fusible alloys, white bearing metals, pewter type metals etc.)
 (d) all (a), (b) & (c).
115. The most important ore of tin is
 (a) chalcopryite (b) flourspar
 (c) cassiterite (d) calamine
116. Tin percentage in pure cassiterite is about
 (a) 26.4 (b) 43.6
 (c) 78.6 (d) 92.2
117. Tin percentage in its crude ore is about
 (a) 2 (b) 44
 (c) 78 (d) 89
118. Tin is recovered from its ore by the methods.
 (a) pyrometallurgical
 (b) hydrometallurgical
 (c) electrometallurgical
 (d) both (b) & (c)
119. Flux used in smelting of black tin concentrates to extract tin is
 (a) silica (b) flourspar or lime
 (c) iron ore (d) sand
120. The temperature required for reduction of tin oxide by carbon and carbon monoxide during smelting of black tin concentrate is about..... °C.
 (a) 300 (b) 500
 (c) 1000 (d) 1600.
121. Melting point of pure tin is..... °C.
 (a) 116 (b) 232
 (c) 696 (d) 900
122. Tin smelting is done in a.....furnace.
 (a) shaft
 (b) reverberatory
 (c) both (a) & (b)
 (d) neither (a) nor (b)
123. Use of reverberatory furnace compared to a shaft furnace for tin smelting
 (a) produces purer tin from less pure extremely fine ores.
 (b) retains a large quantity of tin in the bed of the furnace, which is recovered only when the smelting campaign is ended.
 (c) produces slag richer in tin and the process is intermittent.
 (d) all (a), (b) and (c).
124. Tin percentage in the slag resulting from the smelting of tin may be about
 (a) 2 (b) 8
 (c) 32 (d) 64

Answers

111. (c)	112. (a)	113. (d)	114. (d)	115. (c)	116. (c)
117. (a)	118. (a)	119. (b)	120. (c)	121. (b)	122. (c)
123. (d)	124. (c)				

125. Tin is present in the slag mostly as
 (a) silicate (b) chloride
 (c) oxide (d) sulphide
126. Flux used in tin slag melting for recovery of tin from it, is
 (a) silica (b) limestone
 (c) bauxite (d) tin oxide
127. Refining of impure tin is done
 (a) electrolytically.
 (b) in a reverberatory furnace.
 (c) at a temperature just above the melting point of tin (*i.e.* 232°C).
 (d) both (b) & (c).
128. Lead
 (a) can't be work hardened.
 (b) has a low recrystallisation temperature.
 (c) can be made into rod/pipe by extrusion.
 (d) all (a), (b) & (c).
129. Measure of purity of lead is the
 (a) production of a very dull sound when struck with a hammer.
 (b) darkness of its streak on white paper,
 (c) both (a) & (b).
 (d) neither (a) nor (b).
130. Most significant & important property of lead is its
 (a) low melting point.
 (b) shock absorbing capacity.
 (c) high resistance to corrosion.
 (d) high recrystallisation temperature.
131. Corrosion resistance of lead can be increased by
 (a) work hardening.
 (b) annealing.
 (c) additions of Cu, Ni & Te.
 (d) none of these.
132. Lead mattresses are used
 (a) as shock absorbers between the foundations and steel framework of skyscrapers.
 (b) as pigments.
 (c) for electrical cable sheathing.
 (d) none of these.
133. Which is not an ore of lead ?
 (a) Galena (b) Anglesite
 (c) Cerussite (d) Azurite
134. Which in its purest form contains maximum percentage of lead ?
 (a) Galena (b) Anglesite
 (c) Cerussite (d) Cassiterite
135. Lead percentage in pure 'Galena' is about
 (a) 8.6 (b) 35.8
 (c) 61.4 (d) 86.6
136. Lead percentage in pure Anglesite is about
 (a) 4.2 (b) .68
 (c) 68.3 (d) 89.3
137. Lead percentage in pure cerussite is about
 (a) 6.5 (b) 18.5
 (c) 44.5 (d) 77.5
138. Lead percentage in a typical lead ore may be about
 (a) 4 (b) 24
 (c) 64 (d) 84
139. The main/maximum use of lead is in the
 (a) storage batteries manufacture.
 (b) lining of chemical equipment.
 (c) bearing material manufacture.
 (d) paint manufacture.

Answers

- | | | | | | |
|----------|----------|----------|----------|----------|----------|
| 125. (a) | 126. (b) | 127. (d) | 128. (d) | 129. (c) | 130. (c) |
| 131. (c) | 132. (a) | 133. (d) | 134. (a) | 135. (d) | 136. (c) |
| 137. (d) | 138. (b) | 139. (a) | | | |

140. Most of the lead is produced in a
 (a) reverberatory furnace
 (b) blast furnace
 (c) rotary kiln
 (d) none of these
141. Extraction of lead from lead sulphide is done by
 (a) direct reduction with carbon.
 (b) direct reduction by CO.
 (c) first converting it into oxide (by roasting) before smelting.
 (d) All (a), (b) & (c).
142. The most common ore of lead is
 (a) galena (b) anglesite
 (c) cerussite (d) chalcocite
143. Cross-section of the blast furnace used for smelting of lead ores is
 (a) circular (b) rectangular
 (c) same as that used in case of copper ore
 (d) both (b) & (c).
144. Roasting of lead ore is done in
 (a) Dwight-Lloyd Sintering Machine.
 (b) blast furnace.
 (c) reverberatory furnace.
 (d) none of these.
145. Lead ores rich in gold & silver is charged raw in the blast furnace (i. e. not roasted) to
 (a) prevent their loss by volatilisation.
 (b) facilitate its complete melting.
 (c) achieve its better desulphurisation.
 (d) increase the yield of lead.
146. Slag from a lead blast furnace consists mainly of.....of iron & calcium.
 (a) oxides (b) silicates
 (c) sulphates (d) chlorides
147. Coke consumption in lead blast furnace is about percent of the charge.
 (a) 2-4 (b) 12-15
 (c) 48-50 (d) 80-85
148. Temperature in the tuyere level in the lead blast furnace is about °C.
 (a) 500 (b) 1300
 (c) 1800 (d) 2200
149. Pattinson's process and Parke's process is used for the
 (a) removal of impurities like S, Cu & As from lead.
 (b) desilverisation of lead.
 (c) drossing.
 (d) none of these.
150. Litharge is chemically
 (a) PbS (b) PbO
 (c) Pb-Ag alloy (d) Pb-Ag-Au alloy
151. Cupellation is carried out for the
 (a) purification of gold,
 (b) purification of copper.
 (c) extraction of silver & gold from lead.
 (d) none of these.
152. Zinc is not
 (a) resistant to atmospheric corrosion.
 (b) very malleable or ductile at ordinary temperature.
 (c) rollable into thin sheets under any circumstances.
 (d) able to be drawn into wire in any case.
153. Bulk of the zinc is used mainly for the
 (a) protection of steel by galvanising.
 (b) production of zinc based die casting.
 (c) manufacture of pigments.
 (d) manufacture of brasses.

Answers

140. (b)	141. (c)	142. (a)	143. (d)	144. (a)	145. (a)
146. (b)	147. (b)	148. (b)	149. (b)	150. (b)	151. (c)
152. (b)	153. (a)				

154. The largest consumption of zinc for alloys is in the making of
 (a) brasses (b) bearing metal
 (c) brazing solder (d) die-casting alloys
155. Which is an ore of zinc?
 (a) Galena (b) Azurite
 (c) Calamine (d) Cerussite
156. Zn percentage in pure mineral calamine is about
 (a) 16 (b) 28
 (c) 52 (d) 82
157. Sphalerite (an ore of zinc) is a/anore.
 (a) oxide (b) sulphide
 (c) carbonate (d) nitride
158. The main deposit of zinc ore in India is in
 (a) Jharkhand (b) Bengal
 (c) Orissa (d) Rajasthan
159. Zinc is extracted from its ore by the method.
 (a) pyrometallurgical
 (b) hydrometallurgical
 (c) both (a) & (b)
 (d) neither (a) nor (b).
160. The main object in roasting zinc ore is to convert
 (a) ZnS to ZnO (b) ZnO to ZnS
 (c) ZnCO_3 to ZnO (d) ZnSO_4 to ZnO
161. Dwight-Lloyd machine is used for the roasting of..... ore.
 (a) lead (b) zinc
 (c) both (a) & (b) (d) neither (a) nor (b).
162. Which of the following reactions involved in the reduction of zinc from its oxide is exothermic?
 (a) $\text{ZnO} + \text{C} = \text{Zn} + \text{CO}$
 (b) $2 \text{ZnO} + \text{C} = 2\text{Zn} + \text{CO}_2$
 (c) $\text{ZnO} + \text{CO} = \text{Zn} + \text{CO}_2$
 (d) none of these
163. Recovery of zinc from its ore is aboutpercent.
 (a) 60-62 (b) 74 - 76
 (c) 38 - 10 (d) 96-98
164. Which is the single largest item of zinc loss in its smelting?
 (a) Zinc remaining in retort.
 (b) Zinc absorption by retorts.
 (c) Zinc vapour permeation through the retorts.
 (d) Failure of zinc vapours to condense.
165. 'Hard zinc' is
 (a) Zn-Fe alloy.
 (b) redistilled to produce pure zinc.
 (c) used in the manufacture of sterro metal (Cu = 60%, Zn = 38%, Fe = 2%).
 (d) all (a), (b) & (c).
166. Spelter is a.....concentrate.
 (a) Zinc (b) lead
 (c) Tin (d) Copper
167. Purity of zinc obtained by redistillation of spelter can be as high as percent.
 (a) 29.9 (b) 79.9
 (c) 89.9 (d) 99.9
168. The formation of undesirable zinc ferrite (which is insoluble in warm dilute H_2SO_4) during roasting of zinc ore depends upon the
 (a) temperature & duration of roasting.
 (b) iron content of the ore.
 (c) association of iron & zinc.
 (d) all (a), (b) & (c).

Answers

154. (a)	155. (c)	156. (c)	157. (b)	158. (d)	159. (c)
160. (a)	161. (c)	162. (d)	163. (c)	164. (a)	165. (d)
166. (a)	167. (d)	168. (d)			

169. Zinc sulphide roasts at a temperature of°C.
 (a) <600 (b) > 600
 (c) 350 (d) 1300
170. Leaching of roasted zinc ore is done with
 (a) dilute H₂SO₄
 (b) concentrated (99%) H₂SO₄
 (c) dilute HCl
 (d) dilute HNO₃.
171. In zinc smelting blast furnace,.....of the furnace.
 (a) preheated air is introduced both at the top & bottom
 (b) zinc vapour & other gases are withdrawn from the centre
 (c) both (a) & (b).
 (d) neither (a) nor (b).
172. Which of the following materials requires maximum electrical power (kWh/ton of product), when produced by either electrolysis or in electric furnace?
 (a) Copper (b) Aluminium
 (c) Pig iron (d) Zinc
173. Charge for the zinc smelting blast furnace is preheated to °C.
 (a) 150 (b) 300
 (c) 800 (d) 1100.
174. Percentage of zinc vapour in the gas coming out of zinc smelting blast furnace is about
 (a) 1 (b) 5
 (c) 25 (d) 45
175. Residual zinc percentage in the slag from zinc smelting blast furnace is about
 (a) 1-5 (b) 20-25
 (c) 40-45 (d) 60-65
176. Oxides of is not reducible by carbon in fuel fired furnace.
 (a) lead (b) tin
 (c) copper (d) aluminium
177. Which of following metals occurs mostly in the form of sulphides ?
 (a) Tin (b) Aluminium
 (c) Silver (d) Iron
178. Which of the following metals occurs mostly in the form of oxides?
 (a) Lead (b) Zinc
 (c) Tin (d) Copper
179. A mineral is called the ore of the metal, if the metal
 (a) percentage in the ore is above 25%.
 (b) can be economically extracted from it.
 (c) has a moderately low melting point.
 (d) is not brittle.
180. Which of the following is not a mineral dressing operation?
 (a) Roasting
 (b) Comminution
 (c) Concentration
 (d) Screening & classification
181. Which of the following ore concentration operations does not utilise the differences in densities?
 (a) Spiralling (b) Jigging
 (c) Tabling (d) Froth floatation.
182. Sulphatising of ores is a..... process.
 (a) smelting (b) roasting
 (c) calcining (d) distillation
183. Heterogeneous mixture of arsenides of two or more metals (resulting from smelting of arsenical ores) is called the
 (a) matte (b) speiss
 (c) bimetal slag (d) none of these

Answers

169. (b)	170. (a)	171. (c)	172. (b)	173. (c)	174. (b)
175. (a)	176. (d)	177. (c)	178. (c)	179. (b)	180. (a)
181. (d)	182. (c)	183. (b)			

184. Which of the following is an acid flux?
 (a) MnO (b) SiO₂
 (c) CaO (d) CaF₂
185. Neutral fluxes like fluorite increase the of the slag.
 (a) basicity (b) acidity
 (c) fluidity (d) none of these
186. Slag is not used for making
 (a) cement (b) fertiliser
 (c) road (d) buildings
187. tons of bauxite is required to produce one ton of aluminium.
 (a) 1.5 (b) 3.5
 (c) 5.5 (d) 8.5
188. Aluminium industry is a highly electrical energy intensive industry. Specific electrical energy consumption in aluminium making is about.....kWh/ton of aluminium.
 (a) 7000 (b) 14000
 (c) 21000 (d) 28000
189. Aluminium is produced by the electrolysis of a solution of alumina in fused cryolite (m.p. - 1000°C). The chemical formula of cryolite is
 (a) Na₃AlF₆
 (b) AlP₃·2Hp
 (c) AlI6
 (d) NaAlO₂
190. Bayer's process is meant for the
 (a) reduction of Al₂O₃ to AL
 (b) purification of bauxite.
 (c) refining of aluminium.
 (d) none of these.
191. During refining of aluminium in Hoopes cell, one ton of aluminium is produced from about tons of alumina.
- (a) 2 (b) 4
 (c) 6 (d) 8.
192. Purity of electrical grade aluminium should be >.....percent.
 (a) 80 (b) 85
 (c) 95 (d) 99
193. Voltage employed in the aluminium reduction cell is about..... volts.
 (a) 5-7 (b) 220-240
 (c) 4000 - 5000 (d) 11000
194. Which of the following pure minerals of copper contains least % of copper ?
 (a) Chalcopyrite (b) Chalcocite
 (c) Cuprite (d) Malachite
195. The copper content in the Indian copper ores varies from.....percent.
 (a) 1 to 3 (b) 7 to 10
 (c) 10 to 15 (d) 15 to 20
196. Coke consumption in the blast furnace for the smelting of copper matte is aboutpercent of the charge.
 (a) 5 (b) 15
 (c) 30 (d) 50
197. Pick out the wrong statement.
 (a) In pyrometallurgy, all reduced elements join the metal and all oxidised ones go to form a slag.
 (b) The fused mass formed by the action of the flux on the gangue of the ore & the fuel is called 'cinder'.
 (c) The alkali & alkaline earth metal are usually obtained by hydro-metallurgical method.
 (d) Froth floatation is used mainly for concentrating sulphide minerals.

Answers

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|----------|----------|----------|----------|----------|----------|
| 184. (b) | 185. (c) | 186. (d) | 187. (c) | 188. (c) | 189. (a) |
| 190. (b) | 191. (a) | 192. (d) | 193. (a) | 194. (a) | 195. (a) |
| 196. (b) | 197. (c) | | | | |

198. The most extensive and major use of copper is in
 (a) electrical industry
 (b) making brasses
 (c) making bronzes
 (d) none of these
199. Purity of copper produced by electrolytic refining of blister copper is about percent.
 (a) 90 (b) 95
 (c) 98 (d) 99.99
200. Leaching operation is carried out in the method of metal extraction.
 (a) hydrometallurgical
 (b) pyrometallurgical
 (c) electro-metallurgical
 (d) all (a), (b) & (c)
201. Sphalerite is the main ore of
 (a) cadmium (b) zinc
 (c) lead (d) tin
202. Calamine is a zinc ore. Zinc percentage in calamine is about
 (a) 38 (b) 52
 (c) 67 (d) 87
203. Extraction of tin from the black tin concentrate (called black tin) is done by smelting in a
 (a) blast furnace
 (b) shaft furnace
 (c) reverberatory furnace
 (d) both (b) & (c)
204. Pick out the wrong statement pertaining to extraction of copper from sulphide ores.
 (a) Sulphur has greater affinity for iron than for copper.
 (b) Oxygen has greater affinity for iron than for copper.
 (c) FeO combines readily with SiO_2 forming a fusible slag.
 (d) CuS, FeS & other sulphides are all miscible and they form matte.
205. Which of the following metals is not extracted by hydrometallurgical method from its ore?
 (a) Tin (b) Zinc
 (c) Copper (d) None of these
206. Which of the following metals is not extracted by pyrometallurgical method from its ore?
 (a) Lead (b) Copper
 (c) Tin (d) Aluminium
207. Which of the following is not an ore of lead?
 (a) Galena (b) Angelsite
 (c) Cerussite (d) Azurite
208. Pick out the wrong statement pertaining to desilverisation of lead by Parke's process.
 (a) Zinc has greater capacity for dissolving silver than lead.
 (b) Lead and zinc are mutually miscible in the liquid state,
 (c) Lead is much heavier than zinc.
 (d) Lead has a lower freezing point than zinc.
209. Litharge is chemically represented as
 (a) PbO (b) PbS
 (c) PbSO_4 (d) PbCO_3 .
210. Alkali and alkaline earth metals are usually obtained by the methods.
 (a) pyrometallurgical
 (b) electrometallurgical
 (c) hydrometallurgical
 (d) none of these

Answers

- | | | | | | |
|----------|----------|----------|----------|----------|----------|
| 198. (a) | 199. (d) | 200. (a) | 201. (b) | 202. (b) | 203. (d) |
| 204. (a) | 205. (a) | 206. (d) | 207. (d) | 208. (b) | 209. (a) |
| 210. (b) | | | | | |

211. Sphalerite is the main source of zinc having percent zinc in it.
 (a) 47 (b) 52
 (c) 67 (d) 87
212. Pick out the wrong statement.
 (a) Bauxite and alumina are chemically same.
 (b) Bauxite is the main ore of aluminium.
 (c) Aluminium is not used for thermal insulation due to its high thermal conductivity.
 (d) Production of vanadium uses aluminium as a reducing agent.
213. The pyrometallurgical process used for the extraction of magnesium is called the process.
 (a) Hoope's (b) Pidgeon
 (c) Bayer's (d) Mond
214. Which of the following processes is used for the extraction of nickel?
 (a) Hoope's process (b) Harris process
 (c) Mond's process (d) Pattinson's process
215. Copper matte comprises mainly of copper sulphide and
 (a) iron oxide (b) iron sulphide
 (c) iron sulphate (d) copper oxide
216. Copper ores are concentrated using
 (a) jiggling process
 (b) magnetic separator
 (c) floatation cell
 (d) classification equipments
217. A furnace is used for smelting of lead ores.
 (a) rotary (b) blast
 (c) reverberatory (d) crucible
218. Electrolytic refining of aluminium is done by the process.
 (a) Hoope's (b) Hall and Heroult
 (c) Harris (d) Bayer's
219. Which of the following processes is used for the electrolytic reduction of alumina ?
 (a) Hoope's process
 (b) Hall and Heroult process
 (c) Harris process
 (d) none of these
220. Which of the following is a sulphide ore of zinc?
 (a) Zincite (b) Calamine
 (c) Zinc blende (d) None of these
221. Matte obtained during smelting of nickel ore comprises of nickel sulphide and sulphide.
 (a) iron (b) copper
 (c) cadmium (d) calcium
222. A/an furnace is employed for smelting of roasted tin ore at 1200°C.
 (a) rotary (b) blast
 (c) reverberatory (d) electric resistance
223. Which of the following is an ore of tungsten?
 (a) Wolframite (b) Wulfenite
 (c) Carnellite (d) Pitchblende
224. Carnellite is an ore of
 (a) tungsten (b) nickel
 (c) magnesium (d) beryllium
225. What is the percentage of copper in the matte obtained after smelting in the extraction of copper?
 (a) 25 (b) 50
 (c) 75 (d) 95

Answers

211. (c)	212. (a)	213. (b)	214. (c)	215. (b)	216. (c)
217. (b)	218. (a)	219. (b)	220. (c)	221. (a)	222. (c)
223. (a)	224. (c)	225. (b)			

226. Aluminium can not be produced by reduction of alumina by carbon due to the fact that
 (a) aluminium has a very high affinity for oxygen upto 2000°C.
 (b) alumina has a very high melting point.
 (c) suitable furnace for reduction is not available.
 (d) none of these.
227. Pick out the wrong statement.
 (a) The largest source of magnesium is sea water.
 (b) Cerium is not a rare earth metal.
 (c) Presence of impurities in copper reduces its electrical conductivity.
 (d) Poling is the process for refining of blister copper.
228. Zinc refining is done by
 (a) liquation (b) distillation
 (c) electrolysis (d) both (b) & (c)
229. Which of the following is an ore of molybdenum?
 (a) Sheelite (b) Pitchblende
 (c) Wulfenite (d) Carnellite
230. Concentrated sulphide nickel ore is subjected to pressure leaching for the extraction of nickel.
 (a) CO_2 (b) SO_2
 (c) NH_3 (d) H_2SO_4
231. In Mond's process, nickel is obtained in the form of
 (a) liquid (b) vapour
 (c) shots (d) none of these
232. Which of the following is added during smelting of roasted tin ore ?
 (a) Lime & coal powder
 (b) Limestone
 (c) Coke
 (d) Dolomite.
233. When sulphide ores of copper is subjected to pressure leaching, the
 (a) ore is roasted.
 (b) ore does not need roasting.
 (c) copper produced does not require refining.
 (d) none of these
234. Which of the following is the major constituents of the slag produced during pyrometallurgical method of extraction of copper from its sulphide ore ?
 (a) Iron oxide (b) Iron silicate
 (c) Iron sulphide (d) Iron sulphate
235. Which of the following is the carbonate ore of copper?
 (a) Cuprite (b) Chalcocite
 (c) Malachite (d) Chalcopyrite
236. Percentage of copper in chalcopyrite is about
 (a) 10 (b) 35
 (c) 55 (d) 70
237. Percentage of copper in high grade copper matte may be about
 (a) 20 (b) 40
 (c) 60 (d) 80
238. Hydrometallurgical process of copper extraction is suitable for itsore.
 (a) carbonate (b) oxide
 (c) sulphide (d) none of these
239. Which of the following is a silicate ore of aluminium?
 (a) Alunite (b) Kaolin
 (c) Cryolite (d) Bauxite

Answers

226. (a)	227. (b)	228. (d)	229. (c)	230. (c)	231. (c)
232. (a)	233. (b)	234. (b)	235. (c)	236. (b)	237. (b)
238. (b)	239. (b)				

240. Aluminium is not extracted from its oxide ore by pyrometallurgical process as in the case of iron ores, mainly because the
 (a) melting point of aluminium is very high (2000°C).
 (b) reduction of aluminium oxide to aluminium with carbon requires a temperature of 2500 °C while aluminium vaporises at 2000°C.
 (c) aluminium becomes brittle at very high temperature.
 (d) none of these.
241. Hoope's process in aluminium extraction from its ore is concerned with the
 (a) conversion of bauxite to alumina.
 (b) reduction of aluminium oxide to aluminium.
 (c) electrolytic refining of aluminium.
 (d) conversion of alumina to aluminium.
242. Which of the following is the carbonate ore of zinc?
 (a) Troosite (b) Calamine
 (c) Zinc blende (d) Franklinitite
243. Which of the following metals can not be extracted from its ore by both pyrometallurgical as well as hydrometallurgical process ?
 (a) Aluminium
 (b) Zinc
 (c) Copper
 (d) None of these
244. Dwight Lloyd machine is used for the
 (a) roasting of zinc sulphide ore.
 (b) electrolytic reduction of alumina.
 (c) distillation of zinc oxide.
 (d) electrolytic refining of copper.
245. Percentage of copper in is about 97.5.
 (a) high grade copper matte
 (b) blister copper
 (c) electrolytically refined copper
 (d) none of these
246. 'Cryolite' used during the extraction of aluminium (Bayer's process) contains a mixture of flourides of calcium, sodium & aluminium. Percentage of aluminium flouride in cryolite is about
 (a) 20 (b) 40
 (c) 60 (d) 80
247. Which is the most important ore of mercury?
 (a) Galena (b) Cinnabar
 (c) Cassiterite (d) Argentite
248. is the main ore of silver.
 (a) Argentite (b) Sylvanite
 (c) Azurite (d) Cryolite
249. Pick out the wrong statement.
 (a) Rolled gold is not an alloy of gold.
 (b) Sulphur does not occur in free state in nature.
 (c) Copper occurs in native state also.
 (d) Copper ore reserves are found mainly in Noamundi (Jharkhand),
250. Temperature maintained during treatment of bauxite with alkali solution in Bayer's process is about °C.
 (a) 35 (b) 100
 (c) 300 (d) 500
251. Zinc oxide is reduced to zinc using in the retort process of zinc extraction.
 (a) coke (b) hydrogen
 (c) carbon dioxide (d) steam

Answers

240. (b)	241. (c)	242. (b)	243. (a)	244. (a)	245. (b)
246. (c)	247. (b)	248. (a)	249. (d)	250. (b)	251. (a)

252. Purity of aluminium achieved in Hoopes's refining process is aboutpercent.
 (a) 95 (b) 96.5
 (c) 98 (d) 99.9
253. is the main ore of gold.
 (a) Calaverite (b) Argentite
 (c) Willemite (d) none of these.
254. Pick out the correct statement.
 (a) Vertical retort process is not the widely used process for the reduction of zinc oxide during the extraction of zinc.
 (b) Lead is such a soft metal, that it can be scratched by finger's nail.
 (c) Copper ore is sintered in the reverberatory furnace.
 (d) During roasting of ores, generally incipient fusion takes place.
255. Copper matte is produced during operation in course of extraction of copper from its ore.
 (a) smelting (b) roasting
 (c) bessemerisation (d) none of these
256. Iron is the most predominant constituent of the slag produced in the pyrometallurgical process for extraction of copper from its sulphide ore.
 (a) silicate (b) phosphate
 (c) aluminate (d) silicide
257. Roasting results in the production of metals in case of
 (a) iron pyrites (b) galena
 (c) bauxite (d) cinnabar
258. Roasting of zinc blende converts it into
 (a) ZnO (b) Zn
 (c) ZnS (d) ZnSO₄
259. Parke's process is used in the extraction of
 (a) aluminium (b) zinc
 (c) silver (d) copper
260. The cyanide process is used for the extraction of
 (a) aluminium (b) gold
 (c) copper (d) mercury
261. The electrolyte in the extraction of alumina is
 (a) fused cryolite with fluorspar.
 (b) fused cryolite with felspar.
 (c) pure alumina with bauxite and molten cryolite.
 (d) pure alumina in molten cryolite.
262. Thermite (a mixture of one part aluminium powder and three parts of Fe₂O₃) process is used to extract metals, when their
 (a) sulphides can not be converted into oxides by roasting.
 (b) oxides can not be reduced by carbon.
 (c) carbonates do not yield oxides by thermal decomposition.
 (d) melting points are very high.
263. Copper is extracted from low grade ore by
 (a) electrometallurgy
 (b) hydrometallurgy
 (c) pyrometallurgy
 (d) all 'a', 'b' & 'c'
264. High purity copper metal is obtained by electrolytic reduction. Which of the following properties is not exhibited by copper ?
 (a) Low electrical conductivity.
 (b) Malleability.
 (c) High thermal conductivity.
 (d) Ductility.
265. 'Cinnabar' is an important ore of
 (a) zinc (b) mercury
 (c) lead (d) copper

Answers

252. (d)	253. (a)	254. (b)	255. (a)	256. (a)	257. (b)
258. (a)	259. (b)	260. (b)	261. (d)	262. (b)	263. (b)
264. (a)	265. (b)				

266. process for metal refining aims at the formation of a volatile halide of a metal at low temperatures by reaction with a halogen and its subsequent decomposition to produce very pure crystalline metal.

- (a) Zone refining (b) Poling
(c) Van Arkel (d) Parke's

267. Pidgeon process is meant for the extraction of

- (a) aluminium (b) lead
(c) magnesium (d) tin

268. Which of the following processes is not involved in the extraction of aluminium from its ore ?

- (a) Serpeck process
(b) Hall-Heroult process
(c) Bayer process
(d) Magnotherm process

269. can be extracted from its ore by employing both hydrometallurgy as well as pyrometallurgy.

- (a) Copper (b) Aluminium
(c) Iron (d) none of these

270. Pick out the correct statement.

- (a) In self fluxing ores, the acid and bases are so well balanced, that they need no external flux.
(b) 'Speiss' produced during smelting of arsenical ores is not brittle.
(c) 'Mattee' (or regulus) produced during smelting of sulphide ores is not brittle.
(d) In 'fire refining', molten metal is subjected to reducing conditions.

271. The maximum consumption of tin is in making.

- (a) alloy (b) tin plate
(c) bearing material (d) roof sheet

272. Match the characteristics of various non-ferrous metals.

List I

- (a) Metal whose extraction is the most expensive.
(b) Metal standing higher in electrochemical series.
(c) Metal whose oxide is not reducible by carbon in a fuel fired furnace.
(d) Metal whose oxide decomposes by heat alone.

List II

- I. Aluminium
II. Gold
III. Silver
IV. Alkali & alkaline earth metals.

273. Match the name of ores of various non-ferrous metals.

List I

List II

- (a) Molybdenum I. Anglesite
(b) Tungsten II. Carnellite
(c) Magnesium III. Wolframite
(d) Lead IV. Wulfenite

274. Match the types of ores of various non-ferrous metals.

List I

- (a) Carbonate ore of lead.
(b) Oxide ore of tin.
(c) Sulphide ore of copper.
(d) Carbonyl ore of zinc.

List II

- I. Calamine II. Cerussite
III. Cassiterite IV. Chalcocite

Answers

- | | | | | | |
|--------------------------|----------|--------------------------|----------|--------------------------|----------|
| 266. (c) | 267. (c) | 268. (d) | 269. (a) | 270. (a) | 271. (b) |
| 272. (ii) (iv) (i) (iii) | | 273. (iv) (iii) (ii) (i) | | 274. (ii) (iii) (iv) (i) | |