

05. Which of the following variables affects the furnace capacity?

- (A) Temperature of flue gas
- (B) Thermal conductivity of stock
- (C) Thickness of heating stock
- (D) All (A), (B) and (C)

Answer: Option D

06. The purpose of controlling the furnace atmosphere is to prevent surface attack by

- (A) Oxidation/scaling
- (B) Decarburising
- (C) Sulphur penetration
- (D) Either of the above

Answer: Option D

07. Scaling of furnace stock is reduced by _____ in flue gas.

- (A) CO
- (B) H₂
- (C) High CO/CO₂
- (D) All (A), (B) & (C)

Answer: Option D

08. Which is not accomplished in an underfired furnace?

- (A) Increase in heating capacity/m² of floor space
- (B) Elimination of cold spot at the bottom of the charge
- (C) Reduction in the temperature of furnace gases
- (D) Protection of the periphery of the charge from excessive radiation

Answer: Option A

09. An improved and fuel efficient version of the pusher type reheating furnace is the _____ furnace.

- (A) Walking beam
- (B) Shaft
- (C) Tunnel
- (D) Rotary hearth

Answer: Option A

10. Circulation of gases in furnace is caused by the

- (A) Change in volume during a change of temperature
- (B) Difference in density between hot and cold gases
- (C) Furnace pressure in conjunction with draft in flues
- (D) All (A), (B) and (C)

Answer: Option D

11. Forced recirculation of furnace gases is practised

- (A) To increase heat transfer by convection
- (B) To ensure uniform temperature
- (C) In furnaces, operating below 750°C
- (D) All (A), (B) and (C)

Answer: Option D

12. Which of the following variables does not affect the furnace capacity?

- (A) Size of the furnace
- (B) Gas velocity in furnace
- (C) Ratio of wall surface to surface of stock
- (D) None of these

Answer: Option D

13. In a furnace, the heat taken by the charge/stock and the heat lost to the furnace structure & flue gases depends on the

- (A) Rate of firing and emissivity of flame
- (B) Thermal conductivity of the charge & structural materials of furnace
- (C) Nature of process; whether batch, continuous or intermittent
- (D) All (A), (B) and (C)

Answer: Option D

14. An example of a periodic furnace is the

- (A) Blast furnace stoves
- (B) Blast furnace
- (C) Coke oven heating chamber
- (D) Rotary kilns

Answer: Option A

15. Flue gas outlet temperature from the chimney of any furnace should be ideally about _____ °C.

- (A) 50
- (B) 100
- (C) 150
- (D) 250

Answer: Option C

16. Which of the following advantages is not associated with the use of preheated air for combustion of a fuel in the furnace?

- (A) Increase in calorific value of the fuel
- (B) Increase in flame temperature
- (C) Reduction in scale losses
- (D) Saving in fuel consumption

Answer: Option A

17. Which of the following is a batch furnace?

- (A) Cupola
- (B) Reheating furnace
- (C) Glass tank furnace
- (D) None of these

Answer: Option A

18. The thermal efficiency of an air/fuel gas preheating recuperator may be as high as _____ percent.

- (A) 50
- (B) 65
- (C) 85
- (D) 99

Answer: Option C

19. Which of the following is not a continuous waste heat recovery equipment from the flue gases going out of furnace?

- (A) Economiser
- (B) Regenerator
- (C) Ceramic recuperator
- (D) Waste heat boiler

Answer: Option B

20. Which of the following is not a recuperative furnace?

- (A) Soaking pit
- (B) Reheating furnace
- (C) Steam boiler
- (D) Coke oven

Answer: Option D

21. Waste heat from the outgoing flue gases in a thermal power plant is recovered by a/an

- (A) Economiser
- (B) Steam superheater
- (C) Air preheater
- (D) All (A), (B) and (C)

Answer: Option D

22. An example of shaft furnace is the

- (A) L.D. converter
- (B) Glass melting tank
- (C) Blast furnace
- (D) Soaking pit

Answer: Option C

23. Use of pulverised coal in boilers provides

- (A) Higher calorific value
- (B) Better combustion
- (C) Smokeless burning
- (D) Less erosion on furnace wall

Answer: Option B

24. In salt bath furnace, heat is transferred to the charge mainly by

- (A) Conduction
- (B) Convection
- (C) Radiation
- (D) None of these

Answer: Option A

25. Example of an indirectly heated furnace is

- (A) Hood annealing furnace
- (B) Muffle furnace
- (C) Both (A) and (B)
- (D) Neither (A) nor (B)

Answer: Option C

26. The heating capacity of muffle furnace depends on the

- (A) Surface area & emissivity of the stock
- (B) Properties of the muffle wall (temperature, area, and emissivity)
- (C) Both (A) & (B)
- (D) Neither (A) nor (B)

Answer: Option C

27. In case of pulverised coal fired steam boiler, the secondary air serves the main purpose of

- (A) Transportation of coal
- (B) Drying of coal
- (C) Combustion of coal by supplying it around the burner
- (D) Preheating the primary air

Answer: Option C

28. Ceramic recuperators (made of SiC) is economical, only when used for preheating combustion air above _____ °C.

- (A) 250
- (B) 650
- (C) 850
- (D) 1000

Answer: Option B

29. Which of the following is a directly fired intermittent furnace?

- (A) Walking beam reheating furnace
- (B) Reverberatory furnace
- (C) Tower furnace
- (D) Tunnel kiln

Answer: Option B

30. Furnace aerodynamics is related to the _____ in the furnace.

- (A) Movement of gases
- (B) Measurement of flue gas volume
- (C) Temperature control
- (D) Pressure adjustment

Answer: Option A

31. Temperature of a furnace fired with low calorific value fuel gas (i.e. lean gas) can be increased by

- (A) Preheating the combustion air
- (B) Oxygen enrichment of combustion air
- (C) Preheating the fuel gas
- (D) All (A), (B) & (C)

Answer: Option D

32. Which of the following is a periodic furnace?

- (A) Tunnel kiln
- (B) Rotary kiln
- (C) Soaking pit
- (D) Reheating furnace

Answer: Option C

33. If fuel and air are mixed ahead of the burner, it is called a/an _____ burner.

- (A) Premix
- (B) Outside mixing type
- (C) Rotary
- (D) Diffusion

Answer: Option A

34. Pulverised fuel fired furnaces employ _____ fuel firing.

- (A) Horizontal
- (B) Vertical
- (C) Tangential
- (D) All (A), (B) and (C)

Answer: Option D

35. Heat balance of furnace provides means of determining the

- (A) Thermal efficiency of the process
- (B) Sources of heat losses
- (C) Scope of reduction of heat losses
- (D) All (A), (B) and (C)

Answer: Option D

36. Main gas valve in a gaseous fuel burner is a _____ valve.

- (A) Gate
- (B) Butterfly
- (C) Globe
- (D) None of these

Answer: Option A

37. Means for giving direction to the circulation of gases in furnaces are

- (A) Fans
- (B) Arrangement of heating stock in the furnaces
- (C) Location of outlet ports and heating & combustion devices
- (D) All (A), (B) and (C)

Answer: Option D

38. Turn down ratio of a burner

- (A) Should be as low as possible i.e., 1 : 2
- (B) Should be 1:1 for a batch type furnace
- (C) Is the ratio of maximum to minimum permissible heat input rates
- (D) Is normally much more for a continuous furnace as compared to a batch furnace

Answer: Option C

39. Oxygen percentage in the flue gas coming out of a gaseous fuel fired furnace should be ideally about _____ percent.

- (A) < 2
- (B) < 5
- (C) < 8
- (D) < 10

Answer: Option A

40. Which is not a hearth furnace?

- (A) Glass tank furnace
- (B) Open hearth furnace
- (C) Cupola
- (D) Reheating furnace

Answer: Option C

41. Which of the following accentuates clinkering troubles on furnace grate burning coal?

- (A) Low reactivity of carbonised residue containing high proportion of iron & sulphur
- (B) Low forced draft & fuel bed temperature
- (C) Thick firebed and preheated primary air
- (D) All (A), (B) and (C)

Answer: Option D

42. Combustion of fuel in a furnace with oxygen enriched air results in higher

- (A) Flue gas volume
- (B) Flame temperature
- (C) Fuel consumption
- (D) Stack loss

Answer: Option B

43. Cement Kiln is a

- (A) Rotary Kiln
- (B) Tunnel Kiln
- (C) Natural draft furnace
- (D) Batch furnace

Answer: Option A

44. Regenerators compared to the recuperators for the same duty

- (A) Occupy more space
- (B) Are less costly
- (C) Are of smaller size
- (D) All (A), (B) and (C)

Answer: Option A

45. Which furnace employs an I.D. fan for the removal of flue gases from the furnace?

- (A) Coke oven
- (B) Blast furnace stoves
- (C) Beehive coke oven
- (D) High pressure boiler

Answer: Option D

46. Ceramic recuperators compared to metallic recuperators for the same duty

- (A) Are lighter
- (B) Occupy more space
- (C) Are less costly
- (D) Have higher pressure differential between flue gas & air side

Answer: Option B

47. Reverberatory furnace is used for

- (A) Roasting/reduction of ores
- (B) Annealing steel coil
- (C) Heating air
- (D) Steel melting

Answer: Option A

48. Rate of heat release in a furnace, which is the measure of heat intensity, is defined as

- (A) kcal/hr/m³ combustion space
- (B) kcal/m³ combustion space
- (C) kcal/hr
- (D) None of these

Answer: Option A

49. Fuel used in B.F. stove is

- (A) Pulverised coal
- (B) Furnace oil
- (C) Blast furnace gas/mixed gas
- (D) Coke oven gas

Answer: Option C

50. Design of waste heat boiler for recovery of waste heat from furnace gases depends upon the

- (A) Quantity & temperature of waste gas
 - (B) Dust concentration & nature of dust in waste gas
 - (C) Corrosive nature of the waste gas
 - (D) All (A), (B) and (C)
- Answer: Option B

51. In a furnace operation, which is not preheated?

- (A) Solid fuels
 - (B) Hydrocarbon containing fuel gases (e.g. coke oven gas, refinery gas etc.)
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
- Answer: Option C

52. Maximum heat transfer in high temperature furnaces is by

- (A) Conduction
 - (B) Convection
 - (C) Radiation
 - (D) Either (A), (B) or (C); depends on the type of furnace
- Answer: Option C

53. The main function of a muffle in the muffle furnace is to

- (A) Protect the charge from the effects of the products of combustion
 - (B) Smooth out temperature inequalities on the combustion side of the muffle wall
 - (C) Both (A) & (B)
 - (D) Neither (A) nor (B)
- Answer: Option C

54. Decarburisation of steel

- (A) Is the removal of carbon from iron carbide (Fe_3C)
 - (B) Affects its crystalline structure
 - (C) Is favoured by CO_2
 - (D) All (A), (B) and (C)
- Answer: Option D

55. Heat transfer rate to the stock/charge in the furnace does not depend upon the

- (A) Emissivity of the refractory walls
 - (B) Size of the furnace
 - (C) Use of waste heat recovery equipments
 - (D) Thickness of the stock
- Answer: Option C

56. Hearth furnaces are not used for

- (A) Roasting
 - (B) Melting
 - (C) Reheating
 - (D) None of these
- Answer: Option D

57. In order to maintain an oxidising atmosphere in a furnace, it should have

- (A) More of excess air
 - (B) Less of excess air
 - (C) More of CO in flue gas
 - (D) More of CO_2 in flue gas
- Answer: Option A

58. In a muffle furnace, the muffle

- (A) Retards the heat transfer
 - (B) Assists in temperature equalisation in the charge
 - (C) Permits the use of controlled atmosphere for the protection of stock
 - (D) All (A), (B) and (C)
- Answer: Option D

59. Which is a regenerative furnace?

- (A) Coke oven heating chamber
- (B) Open hearth furnace

- (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
- Answer: Option C

60. Combustion of furnace oil in a furnace (soaking pit) with preheated combustion air at 400°C results in saving of about _____ percent furnace oil as compared to its combustion with atmospheric air, if the flue gas outlet temperature from the soaking pit is 1200°C.

- (A) 5
- (B) 60
- (C) 20
- (D) 40

Answer: Option C

61. In a furnace employing forced draught as compared to induced draught,

- (A) Air is sucked in, so air leaks are more and hence the furnace efficiency is reduced
- (B) The fan operates hot and hence blades are liable to corrosion and erosion
- (C) Positive pressure exists in the furnace
- (D) None of these

Answer: Option C

62. Regenerators are used for waste heat recovery in

- (A) By-product coke ovens
- (B) Beehive coke oven
- (C) Blast furnace stoves
- (D) Soaking pits

Answer: Option A

63. An example of recuperative furnace is the

- (A) Soaking pit
- (B) Open hearth furnace
- (C) Coke ovens
- (D) None of these

Answer: Option A

64. The heat recoverable from flue gases of furnaces depends on the

- (A) Thermal efficiency of furnace
- (B) Quantity of flue gases
- (C) Flue gas temperature drop through the furnace
- (D) All (A), (B) and (C)

Answer: Option D

65. Overall thermal efficiency of a lumpy coal fired suitably designed heating furnace, if operated & maintained properly may be about _____ percent.

- (A) 10-15
- (B) 25-30
- (C) 45-50
- (D) 65-70

Answer: Option B

66. Operation of blast furnace stove is based on the principles of a _____ furnace.

- (A) Regenerative
- (B) Recuperative
- (C) Both (A) and (B)
- (D) Neither (A) nor (B)

Answer: Option A

67. Higher furnace temperature cannot be achieved by use of a lean fuel gas in the furnace by

- (A) Increasing the draft in the furnace
- (B) Preheating the fuel gas
- (C) Oxygen enrichment of combustion air
- (D) Preheating the combustion air

Answer: Option A

68. Air filtration in a furnace

- (A) Reduces its thermal efficiency

- (B) Is indicated by flame sting out
 - (C) Increases the flue gas temperature
 - (D) None of these
- Answer: Option A

69. Blast furnace stoves are meant for heating

- (A) Air
 - (B) Blast furnace gas
 - (C) Steam
 - (D) None of these
- Answer: Option A

70. Which of the following is not a directly fired furnace?

- (A) By-product coke oven
 - (B) Calcination kiln
 - (C) Sintering furnace
 - (D) Open hearth furnace
- Answer: Option A

71. Heat transfer rate to the charge/stock in a furnace does not depend upon the

- (A) Type of fuels viz. solid, liquid or gaseous
 - (B) Flue gas temperature
 - (C) Emissivity of refractory walls
 - (D) Initial temperature of the charged stock
- Answer: Option A

72. Thermal efficiency of an open hearth furnace may be about _____ percent.

- (A) 5
- (B) 20
- (C) 50
- (D) 80

Answer: Option B

73. The amount of combustible escaping unconsumed from the furnace, depends upon the

- (A) Air supplied and furnace temperature
- (B) Burner design (thoroughness of mixing versus stratification)
- (C) Air preheat and the flow of gases in the furnace (mixing by induction, by acceleration or by change of direction)
- (D) All (A), (B) and (C)

Answer: Option D

74. The electric furnace in which heat is produced by a combination of induced current and skin effect is called _____ furnace.

- (A) Arc
- (B) Resistance
- (C) Low frequency induction
- (D) High frequency induction

Answer: Option D

75. Reducing atmosphere is maintained in a

- (A) Calcination kiln
- (B) Blast furnace
- (C) Soaking pit
- (D) L.D. converter

Answer: Option B

76. Which of the following is the most suitable for preheating combustion air above 650°C?

- (A) Regenerator
- (B) Metallic recuperator
- (C) Ceramic recuperator
- (D) None of these

Answer: Option C

77. Heat transfer takes place through a liquid medium surrounding the submerged material under heating, in case of a/an

- (A) Blast furnace
 - (B) Steam boiler
 - (C) Salt bath furnace
 - (D) Annealing furnace
- Answer: Option C

78. Artificial draught produced by a fan in the furnace can be controlled by the

- (A) Speed of the fan
- (B) Damper
- (C) Variation in the pitch of fan blades
- (D) All (A), (B) and (C)

Answer: Option D

79. Ceramic coating material for furnace refractory, which increases its emissivity and thus the radiation heat transfer rate in the furnace, comprises of

- (A) Graphite powder
- (B) Thoria
- (C) Zircon powder
- (D) Beryllium

Answer: Option C

80. Protective gas used in the annealing furnace for steel coil comprises of

- (A) 95% N₂ + 5% H₂
- (B) 5% H₂ + 9% N₂
- (C) 100% CO
- (D) 100% H₂

Answer: Option A

81. Which one is not an induced draught furnace?

- (A) Blast furnace stove
- (B) Sintering furnace
- (C) High pressure boiler
- (D) None of these

Answer: Option A

82. Acid dew point temperature (ADT) of a flue gas produced by the combustion of a fuel containing 1% sulphur may be about _____ °C.

- (A) 80
- (B) 130
- (C) 180
- (D) 250

Answer: Option B

83. Furnace pressure is normally controlled by regulating the

- (A) Air pressure
- (B) Fuel gas pressure
- (C) Speed of I.D. fan
- (D) Damper

Answer: Option D

84. Reheating furnace (pusher type) is used for heating

- (A) Ingots
- (B) Slabs
- (C) Steel coils
- (D) Steel sheets

Answer: Option B

85. _____ is an indirectly heated furnace.

- (A) Open hearth furnace
- (B) Muffle furnace
- (C) Soaking pit
- (D) Reheating furnace

Answer: Option B

86. Shaft furnaces are used for

- (A) Smelting
- (B) Calcining
- (C) Roasting
- (D) All (A), (B) and (C)

Answer: Option D

87. Fuel economy in furnaces can be achieved by

- (A) Using oxygen enriched combustion air
- (B) Preheating the combustion air
- (C) Reducing the heat loss through furnace openings & doors
- (D) All (A), (B) and (C)

Answer: Option D

88. Regenerators are installed in

- (A) Coke ovens
- (B) Open hearth furnace
- (C) Both (A) & (B)
- (D) Neither (A) nor (B)

Answer: Option C

89. Ingress of cold air in the furnaces through cracks, charging doors, openings etc.

- (A) Reduces the flue gas temperature and makes the furnace atmosphere oxidising
- (B) Increases the load on the induced draft fan
- (C) Reduces the furnace draught
- (D) All (A), (B) and (C)

Answer: Option D

90. Presence of SO₂ in furnace gases attacks the ferrous metal by way of

- (A) Accelerating the rate of scaling
- (B) Causing metal embrittlement
- (C) Attacking the grain boundaries; particularly severe on low carbon and nickel bearing steels at high temperature
- (D) All (A), (B) and (C)

Answer: Option D

91. Which is the most thermally efficient furnace?

- (A) Reheating furnace
- (B) Reverberatory furnace
- (C) Rotary kilns
- (D) Boiler furnace

Answer: Option D

92. In a heating process, a heat flow diagram in which the quantities of heat in the various items of a heat balance are represented by the width of a band is called the

- (A) Ostwald chart
- (B) Cox chart
- (C) Sankey diagram
- (D) None of these

Answer: Option C

93. The advantages of firing pulverised coal in the furnace lies in the fact that, it

- (A) Permits the use of high ash content coal
- (B) Permits the use of low fusion point ash coal
- (C) Accelerates the burning rate and economises on fuel consumption
- (D) All (A), (B) and (C)

Answer: Option C

94. In producer gas making furnace, steam is added along with air to mainly control the

- (A) Fusion of coal ash & clinker formation
- (B) C. V. of producer gas
- (C) Temperature of producer gas
- (D) Tar content in producer gas

Answer: Option A

95. _____ furnace is not an electric furnace.

- (A) Arc
 - (B) Induction
 - (C) Pot
 - (D) Resistance
- Answer: Option C

96. Pick out the wrong statement.

- (A) Addition of methane to the furnace atmosphere reduces decarburising by hydrogen
 - (B) Nitrogen in presence of steam decarburises high carbon steel, whereas hydrocarbon gases carburise the surface of steel at annealing temperatures
 - (C) Active nitrogen (formed by cracking ammonia at the metal surface) cause nitride formation with increase in surface hardness
 - (D) None of these
- Answer: Option D

97. To reduce the stack loss, heat recovery from flue gas can be done by

- (A) Preheating of cold stock
 - (B) Preheating of combustion air
 - (C) Steam generation in waste heat boilers
 - (D) All (A), (B) and (C)
- Answer: Option D

98. Thermal efficiency of furnaces can be improved by

- (A) Waste heat recovery from flue gas
 - (B) Minimising heat losses from furnace walls
 - (C) Maintaining proper draught
 - (D) All (A), (B) and (C)
- Answer: Option D

99. Size of the combustion chamber of a furnace depends upon the

- (A) Heat release rate of the fuel
 - (B) Preheat temperature of fuel & air
 - (C) Method of mixing the fuel & air
 - (D) All (A), (B) and (C)
- Answer: Option D

100. Power required in case of forced draught as compared to induced draught (for the same draught produced) is

- (A) Same
 - (B) Less
 - (C) More
 - (D) Either more or less; depends on the flue gas density
- Answer: Option B

101. An electric furnace producing heat by means of an electric arc struck between each of three electrodes and the charge is called _____ furnace.

- (A) Resistance
 - (B) Arc
 - (C) Low frequency induction
 - (D) None of these
- Answer: Option B

102. While the fuel fired furnace can be used upto a maximum temperature of about 1700°C, the electric furnace can be used upto a temperature of about _____ °C.

- (A) 2000
 - (B) 3000
 - (C) 4500
 - (D) 6000
- Answer: Option C

103. Which of the following is a heat treatment furnace?

- (A) Muffle furnace
- (B) Annealing furnace
- (C) Reheating furnace
- (D) Rotary kiln

Answer: Option B

104. Rotary kilns are used in the

- (A) Calcination of limestone & dolomite
- (B) Cement manufacture
- (C) Both (A) and (B)
- (D) Neither (A) nor (B)

Answer: Option C

105. In practical operation of any furnace, zero oxygen percentage or theoretical CO₂ percentage in flue gas is rarely achieved, because of

- (A) Use of non-preheated combustion air
- (B) Use of pulverised solid fuels
- (C) Imperfect mixing of fuel & air and infiltration of air
- (D) Use of excessive positive draft in the furnace

Answer: Option C

106. Soaking pits are meant for heating steel

- (A) Ingots
- (B) Coils
- (C) Sheets
- (D) Slabs

Answer: Option A

107. Metallic recuperators are not used for waste heat recovery, if the hot flue gas temperature is above _____ °C, because corrosion prevails at higher temperatures.

- (A) 350
- (B) 750
- (C) 1050
- (D) 1250

Answer: Option B

108. Pot furnace which is either regenerative or recuperative, is used in the manufacture of

- (A) Glass
- (B) Stainless steel
- (C) Potteries
- (D) Refractory bricks

Answer: Option A

109. In reverberatory furnace, charge is heated mainly by

- (A) Conduction
- (B) Natural convection
- (C) Radiation of heat from the roof of the combustion chamber
- (D) None of these

Answer: Option C

110. Very high pressure boilers are usually _____ boilers.

- (A) Fire tube
- (B) Water tube
- (C) Waste heat
- (D) Natural circulation

Answer: Option D

111. Which one shows the diagrammatic heat balance in a furnace?

- (A) Sankey diagram
- (B) Cox chart
- (C) Ostwald chart
- (D) None of these

Answer: Option A

112. Thermal efficiency of blast furnace stoves used for heating blast (air) may be about _____ percent.

- (A) 20
- (B) 40
- (C) 60

(D) 80

Answer: Option D

113. In which of the waste heat recovery equipment, the flow of flue gas and air is alternately reversed after a fixed interval of time?

- (A) Recuperator
- (B) Regenerator
- (C) Waste heat boiler
- (D) None of these

Answer: Option B

114. Advantages of use of preheated combustion air are

- (A) Saving in fuel consumption
- (B) Reduction in scale losses
- (C) Increase in flame temperature
- (D) All (A), (B) and (C)

Answer: Option D

115. _____ atmosphere is maintained inside an iron blast furnace.

- (A) Oxidising
- (B) Reducing
- (C) Inert
- (D) Decarburising

Answer: Option B

116. Maximum thermal efficiency of boiler may be about _____ percent.

- (A) 10
- (B) 25
- (C) 65
- (D) 90

Answer: Option D

117. If the flame is produced under the hearth and then sweeps up into the heating chamber, this is called a/an _____ furnace.

- (A) Sid-fired
- (B) Under-fired
- (C) Covered
- (D) Recirculating

Answer: Option B

118. Thermal efficiency of a limestone calcination rotary kiln may be around _____ percent.

- (A) 20
- (B) 40
- (C) 65
- (D) 80

Answer: Option B

119. Which of the following is the most important deterrents to an extended use of pulverised coal in boiler firing?

- (A) Ash disposal problem
- (B) Excessive fly ash discharge from the stack
- (C) Higher power consumption in its transportation
- (D) Erosion of induced draft fan blades

Answer: Option A

120. Unit of furnace loading is

- (A) Ton stock/hr/m² hearth area
- (B) Ton stock/hr
- (C) Ton stock/m² hearth area
- (D) Both (B) and (C)

Answer: Option A

121. Large tonnage of refractory bricks are dried in a

- (A) Shaft furnace

- (B) Rotary hearth furnace
 - (C) Tunnel kiln
 - (D) Muffle furnace
- Answer: Option C

122. Specific heating capacity of a furnace is expressed as

- (A) Weight heated/hr
 - (B) Weight heated/furnace volume
 - (C) Weight heated/hr/furnace volume
 - (D) None of these
- Answer: Option C

123. A refractory wall separating the stock and the source of heat is provided in a

- (A) Updraft kiln
 - (B) Muffle furnace
 - (C) Continuous furnace
 - (D) None of these
- Answer: Option B

124. Coke ovens in steel plant are heated by

- (A) Electricity
 - (B) Blast furnace gas/mixed gas
 - (C) Coke oven gas
 - (D) Both (B) and (C)
- Answer: Option D

125. Turndown ratio of a burner gives an idea of the _____ in the furnace.

- (A) Range of fuel firing rates
 - (B) Volume of the combustion chamber
 - (C) Maximum heat input rate only
 - (D) Minimum heat input rate only
- Answer: Option A

126. Amount of coal lost in ash particle, which is carried through the boiler system, depends upon the

- (A) Physical nature, ash content and fineness of the coal
 - (B) Amount of excess air supplied and load on the boiler
 - (C) Type of burner and combustion chamber
 - (D) All (A), (B) and (C)
- Answer: Option D

127. Which is a continuous furnace?

- (A) Coke ovens
 - (B) Annealing furnace
 - (C) Glass tank furnace
 - (D) None of these
- Answer: Option C

128. In furnaces operating at very high temperature (say) 1250°C, e.g. soaking pit), the maximum heat transfer takes place by

- (A) Conduction
 - (B) Convection
 - (C) Radiation
 - (D) Cannot be predicted
- Answer: Option C

129. Overfire burning in a furnace is a phenomenon characterised by

- (A) Supply of excess fuel
 - (B) Supply of excess air
 - (C) Burning carbon monoxide and other incombustible in upper zone of furnace by supplying more air
 - (D) None of these
- Answer: Option C

130. The reason for excessive clinker formation in gas producers is the

- (A) Use of coal/coke containing a high % of fines and ash
- (B) Use of fuel having too low an ash fusion temperature
- (C) Development of hot spots in the fuel bed and an abnormally high rate of gasification
- (D) All (A), (B) and (C)

Answer: Option D

131. Regenerators are normally provided in the

- (A) Glass melting furnace
- (B) Open hearth furnace
- (C) By product coke ovens
- (D) All (A), (B) and (C)

Answer: Option D

132. The rate of scaling of furnace stock depends upon the

- (A) Temperature
- (B) Time
- (C) Nature of atmosphere
- (D) All (A), (B) and (C)

Answer: Option D

133. Which furnace employs preheating, heating and soaking zones?

- (A) Soaking pit
- (B) Reheating furnace
- (C) Open hearth furnace
- (D) Cupola

Answer: Option B

134. In low or standard frequency induction furnace, heat is produced by the

- (A) Combination of induced current and skin effect
- (B) Induction and resistance
- (C) Current flow through a heating element
- (D) None of these

Answer: Option B

135. Fuel economy in an industrial furnace operation cannot be achieved by the use of

- (A) Stoichiometric combustion air
- (B) Non-preheated combustion air
- (C) Combustion air not enriched with oxygen
- (D) Recuperators

Answer: Option A

136. The thermal efficiency of a steel slab reheating furnace (walking beam type) may be about _____ percent.

- (A) 15
- (B) 40
- (C) 70
- (D) 85

Answer: Option B

137. Out of the following fuels used in a furnace exhausting flue gas at a temperature of 600°C, the percentage stack loss will be maximum in case of complete combustion of

- (A) Furnace oil with air
- (B) Furnace oil with oxygen
- (C) Blast furnace gas with air
- (D) Blast furnace gas with oxygen

Answer: Option C

138. Neutral atmosphere is maintained in a/an _____ furnace.

- (A) Cold rolled steel coil annealing
- (B) Open hearth
- (C) Soaking pit
- (D) Walking beam reheating

Answer: Option A

139. Which of the following is not an additive for flue gases from furnace to reduce its dew-point?

- (A) Ammonia
- (B) Fine dolomite
- (C) Alkaline powders
- (D) None of these

Answer: Option D

140. An example of indirectly heated furnace is the

- (A) Soaking pit
- (B) Muffle furnace
- (C) Reheating furnace
- (D) None of these

Answer: Option B

141. The function of an economiser in a boiler is to preheat the

- (A) Feedwater
- (B) Combustion air
- (C) Pulverised coal
- (D) Furnace oil

Answer: Option A

142. Thickness of stock does not affect the fuel economy of furnaces, if the material to be heated is of

- (A) Low emissivity
- (B) High thermal conductivity
- (C) Both (A) and (B)
- (D) Neither (A) nor (B)

Answer: Option C

143. Which of the following furnaces will have maximum thermal efficiency?

- (A) Soaking pits
- (B) Walking beam reheating furnace
- (C) Boiler furnace
- (D) Rotary kilns

Answer: Option C

144. The resistance furnace produces heat by the

- (A) Electric arc struck between electrodes and the charge
- (B) Flow of current through a heating element
- (C) Combination of induced current and skin effect
- (D) None of these

Answer: Option B

145. Ostwald charts are meant for

- (A) Computing the excess/deficiency of combustion air
- (B) Calculation of flue gas temperature
- (C) Computation of flue gas analysis
- (D) None of these

Answer: Option A

146. Dampers are located

- (A) Before the I.D fan
- (B) After the I.D. fan
- (C) Near the top of the chimney
- (D) Anywhere after the I.D. fan

Answer: Option A

147. Regenerators as compared to recuperators for the same duty

- (A) Store smaller quantity of waste heat
- (B) Are lighter & compact
- (C) Involve higher initial cost
- (D) All (A), (B) & (C)

Answer: Option C