08. Economics of 'Solvay Process' depends upon the efficiency of
   (A) Carbonating tower
   (B) Ammonia recovery
   (C) Ammonia recovery and size of the plant
   (D) Ammoniation of salt solution
   Answer: Option C

09. Shaving soaps are
   (A) Soft potassium soaps (potassium salt of fatty acid) with free Stearic acid to give lather a
       lasting property
   (B) Metallic soaps compounded with frothing agents
   (C) High free alkali soaps having excess of cane sugar and alcohol
   (D) None of these
   Answer: Option A

10. At a given temperature, the equilibrium yield of SO₃ obtained from the oxidation of SO₂ is
    proportional to (where, \( P \) = pressure of the system).
    (A) \( P \)
    (B) \( \sqrt{P} \)
    (C) \( P^2 \)
    (D) \( 1/P \)
    Answer: Option B

11. Baking soda is chemically represented by
    (A) \( Na_2CO_3 \)
    (B) \( NaHCO_3 \)
    (C) \( Na_2CO_3.H_2O \)
    (D) \( Na_2CO_3.10H_2O \)
    Answer: Option B

12. Direct conversion of chemical energy into electrical energy is done in a
    (A) Magnetohydrodynamic (MHD) generator
    (B) Fuel cell
    (C) Fast breeder reactor
    (D) None of these
    Answer: Option B

13. Extraction of ________ employs an electrolytic process.
    (A) Aluminium
    (B) Silver
    (C) Copper
    (D) All (A), (B) and (C)
    Answer: Option A

14. Inversion of sucrose produces
    (A) Fructose
    (B) Glucose
    (C) Both (A) & (B)
    (D) Neither (A) nor (B)
    Answer: Option B

15. Phenolic antiseptics are added in the ________ soap.
    (A) Shaving
    (B) Medicated
    (C) Metallic
    (D) Transparent
    Answer: Option B

16. Soap cannot be used with hard water, because
    (A) Hard water contains sulphate
    (B) They form insoluble calcium soaps which precipitate
    (C) They attract back the removed dirt
    (D) None of these
    Answer: Option B
17. The compressive strength of cement should not be less than about 110Kg/cm\(^2\) after three days & not less than 170Kg/cm\(^2\) after seven days. The fineness of an ordinary cement as determined by turbidimetric method should be about ________ cm\(^2\)/gm.
   (A) 800  
   (B) 1600  
   (C) 4000  
   (D) 8500  
   Answer: Option B

18. Carborundum consists mainly of
   (A) Bauxite  
   (B) Silicon carbide  
   (C) Boron carbide  
   (D) Calcium carbide  
   Answer: Option B

19. Pick out the wrong statement.
   (A) Wine, rum & Vodka are prepared by the formulation of fruit juice, sugar beet & rye respectively  
   (B) Protein catalysts are called enzymes  
   (C) The rate of chemical reaction is independent of the concentration of reactants at high concentration of enzymes  
   (D) Total sugar content in molasses is about 10%  
   Answer: Option D

20. Yellow phosphorus is transported under
   (A) Air  
   (B) Water  
   (C) Nitrogen  
   (D) Helium  
   Answer: Option B

21. Carboxymethyl cellulose (CMC) is added in detergents to
   (A) Prevent redeposition of soil on cleaned surface  
   (B) Act as optical brightening agent  
   (C) Inhibit corrosion in washing machines made of aluminium  
   (D) None of these  
   Answer: Option A

22. Nitric acid is not used in the manufacture of
   (A) Detergents  
   (B) Fertilisers  
   (C) Aqua regia  
   (D) Explosives  
   Answer: Option A

23. Styrene (a monomer for the production of polystyrene) is commercially produced by
   (A) Catalytic dehydrogenation of ethyl benzene  
   (B) Dehydration of ethyl alcohol followed by hydrogenation  
   (C) Reacting ethylene oxide with acetaldehyde  
   (D) Fermentation of starch  
   Answer: Option A

24. Which of the following is an explosive?
   (A) Nitro-glycerine  
   (B) Trinitrotoluene (TNT)  
   (C) Cellulose nitrate  
   (D) All (A), (B), and (C)  
   Answer: Option D

25. Reaction of calcium carbide with water produces a gas, which is used
   (A) As an illuminant  
   (B) For metal cutting/welding  
   (C) Both (A) & (B)  
   (D) Neither (A) nor (B)
26. Low temperature carbonisation of coal takes place at ________ °C.
   (A) 300
   (B) 1100
   (C) 700
   (D) 900
   Answer: Option C

27. In the manufacture of sulphuric acid from elemental sulphur, the following sequence of major operations is followed:
   (A) Furnace → converter → absorber
   (B) Furnace → evaporator → absorber
   (C) Furnace → converter → evaporator
   (D) Converter → furnace → absorber
   Answer: Option A

28. Viscose rayon is
   (A) Cellulose nitrate
   (B) Regenerated cellulose nitrate
   (C) Regenerated cellulose acetate
   (D) None of these
   Answer: Option D

29. Which of the following is not a product of coal tar distillation?
   (A) Anthracene
   (B) Creosote oil
   (C) Carbolic oil
   (D) None of these
   Answer: Option D

30. Acrylonitrile is mainly used in the ________ industry.
   (A) Polymer
   (B) Printing
   (C) Dyeing
   (D) Photographic
   Answer: Option C

31. Which of the following is not present in bagasse fibre?
   (A) Cellulose
   (B) Lignin
   (C) Pentogens
   (D) None of these
   Answer: Option D

32. SO₂ is bubbled through hot sugar cane juice to
   (A) Act as an acidifying agent
   (B) Increase its concentration
   (C) Increase the amount of molasses
   (D) Increase the crystal size
   Answer: Option A

33. Nitrile rubber is produced by the polymerisation of
   (A) Acrylonitrile and butadiene
   (B) Acrylonitrile and styrene
   (C) Isobutylene and isoprene
   (D) None of these
   Answer: Option A

34. Maleic anhydride is produced by catalytic oxidation of
   (A) Toluene
   (B) Ethyl alcohol
   (C) Naphthalene
   (D) Benzene
   Answer: Option D
35. Production of one ton of cement requires about __________ tons of limestone.
(A) 0.6  
(B) 1.2  
(C) 2.2  
(D) 3.8  
Answer: Option B

36. Which one of the following is not an elastomer?
(A) Polyisoprene  
(B) Neoprene  
(C) Nitrile-butadiene  
(D) None of these  
Answer: Option D

37. Permanent hardness of water can be removed by
(A) Boiling  
(B) Adding Ca(OH)$_2$  
(C) Boiling it with Na$_2$CO$_3$  
(D) None of these  
Answer: Option C

38. Blue colour is imparted to glass by the addition of
(A) FeSO$_4$  
(B) PbO  
(C) CaO  
(D) NaOH  
Answer: Option C

39. Naphthols are derivates of
(A) Methyl amine  
(B) Naphthalene  
(C) Phenol  
(D) Xylene  
Answer: Option B

40. Phenol formaldehyde
(A) Employs addition polymerisation  
(B) Employs condensation polymerisation  
(C) Is a monomer  
(D) Is an abrasive material  
Answer: Option B

41. In the Solvay process, the product from the calciner is
(A) Light soda ash  
(B) Dense soda ash  
(C) Sodium bicarbonate  
(D) Dehydrated soda ash  
Answer: Option A

42. Lithophane is
(A) Explosive  
(B) White lead  
(C) Filter aid  
(D) ZnS (white pigment)  
Answer: Option D

43. Fermentation is adversely affected by the
(A) Presence of air  
(B) Absence of air  
(C) High concentration  
(D) Presence of ammonium salts  
Answer: Option C

44. Presence of carbonaceous matter in the sewage
(A) Causes reduction in its dissolved oxygen content thereby endangering the life of aquatic creatures
(B) Reduces sulphate ions to sulphides causing obnoxious smell
(C) Increases the quantity of chlorine used for its purification
(D) All (A), (B) and (C)
Answer: Option D

45. Penicillin is made employing ________ fermentation process.
   (A) Continuous
   (B) Aerobic batch
   (C) Anaerobic batch
   (D) None of these
   Answer: Option B

46. Nicotine is
   (A) A volatile alkaloid
   (B) Obtained by treating by-products of the tobacco processing industry
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)
   Answer: Option C

47. Dechlorination of treated water is necessary to
   (A) Remove residual turbidity
   (B) Reduce the bacterial load on filter
   (C) Control taste and odour
   (D) Remove chlorinous taste
   Answer: Option D

48. 20% oleum means that in 100 kg oleum, there are 20 kg of
   (A) SO₃ and 80 kg of H₂SO₄
   (B) H₂SO₄ and 80 kg of SO₃
   (C) SO₃ for each 100 kg of H₂SO₄
   (D) None of these
   Answer: Option A

49. ________ of quicklime produces slaked lime.
   (A) Hydration
   (B) Dehydration
   (C) Hydrogenation
   (D) None of these
   Answer: Option A

50. CO & H₂ are the constituents of
   (A) Producer gas
   (B) Water gas
   (C) Coke oven gas
   (D) All (A), (B) and (C)
   Answer: Option D

51. An oil is converted into fat by its
   (A) Hydrogenation
   (B) Hydrolysis
   (C) Hydrocracking
   (D) Hydration
   Answer: Option A

52. Cellulose content of bamboo and ideal fibrous raw material for the manufacture of paper is ________ percent.
   (A) 10
   (B) 50
   (C) 80
   (D) 95
   Answer: Option B

53. Chemical formula of BHC, which is an insecticide is
54. Concentration of NaOH solution produced by diaphragm electrolytic cell is about ______ percent.

(A) 10  
(B) 25  
(C) 50  
(D) 98  
Answer: Option A

55. Nylon-6 as compared to Nylon-66 is having higher

(A) Hardness  
(B) Abrasion/resistance  
(C) Melting point  
(D) None of these  
Answer: Option D

56. In an integrated steel plant, NH₃ present in coke oven gas is normally recovered as

(A) (NH₄)₂SO₄  
(B) NH₄Cl  
(C) (NH₄)₂ NO₃  
(D) Liquid NH₃  
Answer: Option A

57. Sucrose is a

(A) Monosaccharide  
(B) Disaccharide  
(C) Polysaccharide  
(D) None of these  
Answer: Option B

58. A mixture of chlorine & sodium bromide acts as a/an

(A) Insecticides  
(B) Analgesic drug  
(C) Fire retardant  
(D) Hydrogenation catalyst  
Answer: Option C

59. Plasticisers are added to synthetic plastics to

(A) Impart flexibility  
(B) Improve workability during fabrication  
(C) Develop new improved properties not present in the original resins  
(D) All (A), (B) and (C)  
Answer: Option D

60. __________ is produced using Polycondensation reaction.

(A) Polythene  
(B) Phenol formaldehyde  
(C) Poly vinyl chloride  
(D) None of these  
Answer: Option B

61. One of the steps during refining of cane sugar consists of addition of hydrated lime to the sugar syrup followed by carbonation of the resulting solution. The purpose of this step is to

(A) Adjust the pH of the syrup  
(B) Remove the coloring matter from the syrup  
(C) Reduce the viscosity of the syrup  
(D) Improve the rate of crystallisation of sugar  
Answer: Option A

62. Penicillin, an antibiotic drug was discovered by
63. Celluloid is chemically
(A) Cellulose acetate
(B) Regenerated cellulose
(C) Cellulose nitrate
(D) Cellulose acetate butyrate
Answer: Option C

64. Which of the following impurities in feed water for high pressure boiler is the most detrimental?
(A) Silica
(B) Dissolved oxygen
(C) Suspended salt
(D) Dissolved salt
Answer: Option A

65. Sea water contains about _________ ppm of bromine.
(A) 5
(B) 70
(C) 500
(D) 1700
Answer: Option B

66. Favourable conditions for the liquefaction of gases in general are
(A) High pressure & low temperature
(B) Low pressure & high temperature
(C) High pressure & high temperature
(D) Low pressure & low temperature
Answer: Option A

67. Teflon is
(A) Phenol formaldehyde
(B) An inorganic polymer
(C) Poly tetra-fluoro-ethylene (P.T.F.E.)
(D) A monomer
Answer: Option C

68. Hydrocyanic acid (HCN) is used as an insecticide for
(A) Controlling timber degradation by ants
(B) Controlling poultry lice
(C) Potato beetle
(D) Citrus fruits
Answer: Option D

69. In contact process, SO₃ is absorbed in 97% H₂SO₄ and not in water, because
(A) SO₃ gas is sparingly soluble in water
(B) Water forms an acid mist, which is difficult to absorb
(C) The purity of acid is affected
(D) Scale formation in the absorber is to be avoided
Answer: Option B

70. Catalytic oxidation of toluene produces
(A) Styrene
(B) Phenol
(C) Benzene
(D) Tri-nitro-toluene
Answer: Option B

71. Carbon disulphide is mainly used in the production of
(A) Viscose rayon
72. Contact process of sulphuric acid manufacture
   (A) Yields acid of higher concentration than chamber process
   (B) Yields acids of lower concentration than chamber process
   (C) Is obsolete
   (D) Eliminates absorber
   Answer: Option A

73. Penicillin is separated from fermented broth by
   (A) Extraction with amyl or butyl acetate
   (B) Ternary Azeotropic distillation
   (C) Evaporator in calandria
   (D) Extractive distillation
   Answer: Option A

74. Chemical formula of oleum is
   (A) H$_2$SO$_3$
   (B) H$_2$SO$_4$
   (C) H$_2$S$_2$O$_7$
   (D) H$_2$SO$_7$
   Answer: Option C

75. Which of the following processes can remove both temporary as well as permanent hardness of water?
   (A) Filtration
   (B) Boiling
   (C) Distillation
   (D) None of these
   Answer: Option C

76. Sizing material is incorporated in paper to
   (A) Impart resistance to penetration by liquids
   (B) Increase its thickness
   (C) Increase its flexibility & opacity
   (D) Increase its brightness
   Answer: Option A

77. Widely used method for the conditioning of boiler feed water is the
   (A) Cold lime process
   (B) Coagulation
   (C) Hot-lime soda process
   (D) Sequestration
   Answer: Option C

78. Phenol formaldehyde is produced by condensation polymerisation. It is also known as
   (A) Teflon
   (B) Bakelite
   (C) Polyester
   (D) Nylon-66
   Answer: Option B

79. Shrinkage volume in cement setting does not depend upon the
   (A) Sand to cement ratio
   (B) Water to cement ratio
   (C) Ambient temperature fluctuation
   (D) Drying period
   Answer: Option A

80. What products do we get on electrolysis of saturated brine using steel cathode and graphite anode in an electrolytic cell?
   (A) Cl$_2$ & Na
81. Hydrolysis of sugar is called
(A) Hydration
(B) Inversion
(C) Esterification
(D) None of these
Answer: Option B

82. Chloramines are used in water treatment for
(A) Disinfection and control of taste & odour
(B) Corrosion control
(C) Removing turbidity
(D) Control of bacteria
Answer: Option A

83. Commercially ethylene is produced from naphtha by
(A) Catalytic cracking
(B) Catalytic dehydrogenation
(C) Pyrolysis
(D) Hydrocracking
Answer: Option D

84. Ethanol amine is produced using ammonia and
(A) Ethyl benzene
(B) Ethylene oxide
(C) Ethanol
(D) Ethane
Answer: Option B

85. Coloured glass is obtained by mixing of colored salts. Addition of _________ oxide is done to impart greenish blue color to the glass.
(A) Chromium
(B) Arsenic
(C) Copper
(D) Manganese
Answer: Option C

86. Ore concentration by froth floatation utilises the _________ of ore particles.
(A) Density difference
(B) Wetting characteristics
(C) Terminal velocities
(D) None of these
Answer: Option B

87. Yellow glycerine is made into white, using
(A) Activated carbon
(B) Diatomaceous earth
(C) Bauxite
(D) Bentonite
Answer: Option A

88. Wet chlorine gas produced during electrolysis of brine is dehydrated by
(A) Spraying 66° Be H₂SO₄ counter current to the flow of the gas
(B) Passing it through a bed of diatomaceous earth
(C) Passing it through a bed of silica gel
(D) None of these
Answer: Option A

89. Flux addition during smelting of ore is done to
(A) Remove impurities/gangue
(B) Enhance rate of reaction
90. Commercial production of soda ash by Solvay process requires limestone, ________ as raw materials.
   (A) Coke and sand
   (B) Brine and coal
   (C) Coke and caustic soda
   (D) None of these
   Answer: Option A

91. The manufacture of Kraft pulp is done by a/an ________ process.
   (A) Alkaline
   (B) Acidic
   (C) Neutral
   (D) None of these
   Answer: Option A

92. P.T.F.E. (Poly tetra fluoro ethylene) is commercially known as
   (A) Bakelite
   (B) Neoprene
   (C) Teflon
   (D) Nylon-66
   Answer: Option C

93. The most reactive allotropic form of phosphorus is ________ phosphorus.
   (A) Red
   (B) Yellow
   (C) Violet
   (D) Black
   Answer: Option B

94. Nylon-6 is a
   (A) Polyamide
   (B) Thermosetting resin
   (C) Polyester
   (D) None of these
   Answer: Option A

95. Industrial production of chloroform requires acetone and
   (A) Phosgene
   (B) Calcium hypochlorite
   (C) Chlorine
   (D) Ammonium chloride
   Answer: Option B

96. Which is a high grade pulp?
   (A) Rag pulp
   (B) Mechanical pulp
   (C) Sulphate pulp
   (D) Sulphite pulp
   Answer: Option C

97. The most popular and common detergent i.e., alkyl benzene sulfonate (ABS) is a/an ________ detergent.
   (A) Cationic
   (B) Anionic
   (C) Amphoteric
   (D) Semi polar
   Answer: Option B

98. ________ is a thermosetting plastic.
   (A) Polythene
   (B) Epoxy polymer
99. Nature of hypo (sodium thiosulphate) makes it useful in photography.
   (A) Oxidising
   (B) Reducing
   (C) Complex forming
   (D) Photochemical
   Answer: Option C

100. Zeolite is used in
   (A) Water treatment
   (B) Glass manufacture
   (C) Hydrogenation of fatty oil as a catalyst
   (D) Development of exposed photographic plate
   Answer: Option A

101. Molecular weight of plastics ranges from
   (A) 5000 to 10000
   (B) 20000 to 250000
   (C) 500 to 5000
   (D) 106 to 109
   Answer: Option B

102. The end bleaching agent used to move last traces of colour bodies from the pulp is
   (A) Chlorine dioxide (ClO₂)
   (B) MgO
   (C) SO₂ gas
   (D) Mercaptans
   Answer: Option A

103. Starting material for the production of styrene butadiene rubber (SBR) is
   (A) Ethyl alcohol
   (B) Ethylene
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option C

104. Manufacture of phthalic anhydride uses _________ as a catalyst.
   (A) Ni
   (B) Cr
   (C) V₂O₅
   (D) Al₂O₃
   Answer: Option C

105. Major component of flint glass is
   (A) Lead oxide
   (B) Silica
   (C) Alumina
   (D) Soda
   Answer: Option A

106. Pick out the false statement pertaining to water treatment.
   (A) Aeration of water is effective in CO₂ removal
   (B) The zeolite water softening process reduces the hardness of water by not more than 50%
   (C) Sodium sulphate or sodium carbonate do not cause hardness in water
   (D) Water with pH value less than 7, is acidic
   Answer: Option B

107. Cation exchanger is regenerated usually with
   (A) NaOH
   (B) H₂SO₄
   (C) Hydrazine
   (D) Alum solution
108. Which of the following is not an insecticide?
(A) Hydrocyanic acid
(B) Nicotine
(C) Sodium fluoride
(D) Hexane
Answer: Option D

109. Nylon-6 is manufactured from
(A) Caprolactam
(B) Hexamethylene diamine and adipic acid
(C) Hexamethylene diamine and Maleic anhydride
(D) Hexamethylene diamine and Sebacic acid
Answer: Option A

110. Catalyst used in the oxidation of benzene to produce Maleic anhydride is
(A) V_{2}O_{5}
(B) Pt
(C) Ni
(D) Cr
Answer: Option A

111. Fat splitting catalyst is
(A) CaCO_{3}
(B) ZnO
(C) Al_{2}O_{3}
(D) Fe
Answer: Option B

112. In the manufacture of H_{2}SO_{4}, vanadium catalyst as compared to platinum catalyst
(A) Gives higher conversion efficiency
(B) Has a longer life and is not poisoned by arsenic
(C) Handles lower SO_{2} content gas (7-10\% SO_{2}), thus increasing the capital cost of the plant
(D) All (A), (B) and (C)
Answer: Option D

113. Poly Vinyl Chloride (P.V.C.) is a ________ material.
(A) Thermosetting
(B) Thermoplastic
(C) Fibrous
(D) Chemically active
Answer: Option B

114. ________ acid is the main constituent of cotton seed oil.
(A) Acetic
(B) Linoleic
(C) Palmitic
(D) Oleic
Answer: Option B

115. ________ is used as a flux in the smelting of copper ore like chalcopyrite.
(A) Coke breeze
(B) Lime powder
(C) Silica/quartz
(D) Dolomite
Answer: Option C

116. Sugar content in sugarcane on cane basis is about ________ percent by weight.
(A) 1 to 5
(B) 5 to 10
(C) 15 to 20
(D) 20 to 30
Answer: Option B
117. Glauber’s salt is chemically
   (A) Calcium sulphate
   (B) Potassium sulphate
   (C) Potassium chlorate
   (D) None of these
   Answer: Option D

118. Hydrazine is used in water treatment for the removal of
   (A) Colloidal impurities
   (B) Dissolved oxygen
   (C) Turbidity
   (D) Chlorinous taste
   Answer: Option B

119. Sulphuric acid completely saturated with sulphur trioxide is called
   (A) Concentrated sulphuric acid
   (B) Oleum
   (C) Sulphurous acid
   (D) Dilute sulphuric acid
   Answer: Option A

120. _________ glass is used for the manufacture of optical glass.
   (A) Pyrex
   (B) Soda
   (C) Flint
   (D) Crooke's
   Answer: Option C

121. Commercial production of Vanaspati is done by __________ of edible vegetable oils.
   (A) Hydrogenation
   (B) Oxidation
   (C) Hydrolysis
   (D) Hydrocracking
   Answer: Option A

122. Synthesis gas is a mixture of
   (A) CO and H₂
   (B) N₂ and H₂
   (C) H₂, CH₄ and CO
   (D) CO₂ and H₂
   Answer: Option A

123. Which of the following is an ore of iron?
   (A) Galena
   (B) Chalcopyrite
   (C) Hematite
   (D) Bauxite
   Answer: Option C

124. Which of the following is an yellow pigment?
   (A) Titanium dioxide
   (B) Ferrous sulphate
   (C) Lead chromates
   (D) Zinc sulphides
   Answer: Option C

125. Double Contact Double Absorption (DCDA) process is the most recent process for the manufacture of
   (A) Nitric acid
   (B) Sulphuric acid
   (C) Ammonium sulphate
   (D) Hydrochloric acid
   Answer: Option B

126. Hydrazine (N₂H₄) is used mainly as a/an
127. Naphthalene is removed from coke oven gas by
(A) Adsorbing on palladium
(B) Absorbing in ethanolamine
(C) Scrubbing with wash oil
(D) Passing it through electrostatic precipitator
Answer: Option C

128. Dacron is a
(A) Condensation product of Hexamethylene diamine and adipic acid
(B) Thermosetting material
(C) Condensation product of dimethyl terephthalate and ethylene glycol
(D) None of these
Answer: Option D

129. Catalyst used during the manufacture of 'Vanaspati Ghee' is
(A) Zinc
(B) Nickel
(C) Platinum
(D) Copper
Answer: Option B

130. Fat dispersed in water is exemplified by
(A) Colloids
(B) Gel
(C) Butter
(D) Emulsion
Answer: Option C

131. Enzymes are
(A) Proteins with high molecular weight (around 10,000)
(B) Derived from living organisms
(C) Catalyst for temperature sensitive reactions
(D) All (A), (B) and (C)
Answer: Option D

132. Zeigler process
(A) Produces high density polyethylene
(B) Produces low density polyethylene
(C) Uses no catalyst
(D) Employs very high pressure
Answer: Option A

133. In Kraft process of paper manufacture, white cooking liquor consists of caustic soda
(A) Sodium sulphide & sodium carbonate
(B) Sodium sulphite & sodium carbonate
(C) Sodium sulphite & sodium sulphide
(D) None of these
Answer: Option A

134. 99.5% purity oxygen is used in
(A) Cutting and welding by oxy-acetylene flame
(B) Hospitals for medicinal purposes
(C) Gas masks and artificial breathing apparatus
(D) All (A), (B), and (C)
Answer: Option D

135. Chemical formula of 'salt cake' is
(A) Na₂SO₄
(B) CaSO₄
136. Chalcopyrite is the main ore of
   (A) Copper
   (B) Lead
   (C) Tin
   (D) Iron
   Answer: Option A

137. Linde process of gas liquefaction employs
   (A) Exchange of heat with colder stream
   (B) Adiabatic expansion through a throttle valve (Joule-Thomson expansion)
   (C) Adiabatic expansion against a piston or in a turbine
   (D) Merely compressing the gas beyond its critical pressure
   Answer: Option B

138. Pig iron is produced by blast furnaces in India using mostly the iron ore named
   (A) Hematite
   (B) Magnetite
   (C) Siderite
   (D) Chalcopyrite
   Answer: Option A

139. _________ is a thermosetting plastic.
   (A) Polyvinyl chloride
   (B) Polythene
   (C) Bakelite
   (D) Teflon
   Answer: Option C

140. Lubricating greases are a mixture of
   (A) Mineral oil, soap and additives
   (B) Mineral oil and metallic soap
   (C) Mineral oil and fatty oil
   (D) Fatty oil and metallic soap
   Answer: Option A

141. Antibiotic
   (A) Inhibits/destroys the growth of microorganisms
   (B) Is used as a pain reliever
   (C) Is an antimalarial
   (D) Is an anaesthetic
   Answer: Option A

142. Which of the following fuel gases contains maximum amount of carbon monoxide?
   (A) Coke oven gas
   (B) Water gas
   (C) Blast furnace gas
   (D) L.D. converter gas
   Answer: Option D

143. Digestion of wood-base materials (for manufacture of pulp) is done to
   (A) Remove lignin
   (B) Produce long fibres
   (C) Prevent deterioration on storage
   (D) None of these
   Answer: Option A

144. _________ process is used for producing soda ash.
   (A) Chamber
   (B) Chance
   (C) Tromp
   (D) Solvay
145. Thermosetting plastic materials
   (A) Can be repeatedly melted
   (B) Is useful for melt casting
   (C) Cannot be melted after forming
   (D) Is useful for spinning
   Answer: Option C

146. Starting material for the production of butadiene in India is
   (A) Naphthalene
   (B) Benzol
   (C) Ethyl alcohol
   (D) Phthalic anhydride
   Answer: Option C

147. Pick out the wrong statement.
   (A) Low intensity explosives are also called propellants, whereas high intensity explosive are called detonators
   (B) Gun powder comprises of 75% salt petre, 15% charcoal and 10% sulphur
   (C) Lead azide is a popular military explosive
   (D) TNT is a hygroscopic explosive having very high melting point and is non-toxic to human being
   Answer: Option D

148. Main constituents of cotton fiber is
   (A) Lignin
   (B) Cellulose
   (C) Starch
   (D) Gelatine
   Answer: Option B

149. Rancidity of the fatty oil can be reduced by its
   (A) Decoloration
   (B) Hydrogenation
   (C) Oxidation
   (D) Purification
   Answer: Option B

150. Chrome tanning and vegetable tanning are done for
   (A) Light & heavy leather respectively
   (B) Heavy & light leather respectively
   (C) Both light & heavy leather
   (D) Neither light nor heavy leather
   Answer: Option A

151. Temperature during hydrogenation of oil should not be more than 200°C, otherwise it will result in
   (A) Pyrolysis of oil
   (B) Sintering of porous catalyst
   (C) Hydrogen embrittlement
   (D) All (A), (B) and (C)
   Answer: Option D

152. Pick out the wrong statement.
   (A) Strongly caking coal should not be used in the Lurgi gasifier
   (B) Acetylene gas cannot be used for illumination purpose
   (C) Water gas is called blue gas because of the color of the flame, when it is burnt
   (D) Gaseous fuels require less percentage of excess air for combustion as compared to liquid fuels
   Answer: Option B

153. Oleum produces fumes of
   (A) SO₂
   (B) H₂SO₄
   (C) SO₃
154. The difference between saponification value and acid value is
   (A) Called ester value
   (B) Always negative
   (C) Constant for all fatty oils
   (D) None of these
   Answer: Option A

155. Which of the following is not produced commercially from sea water?
   (A) Magnesium & potassium compounds
   (B) Common salt
   (C) Bromine
   (D) Iodine
   Answer: Option D

156. Which of the following may be viewed as a catalyst in the manufacture of soda ash by Solvay process?
   (A) NH₃
   (B) NaCl
   (C) CaO
   (D) Coke
   Answer: Option A

157. The most commonly used substance to speed up the sedimentation of sewage is
   (A) Lime
   (B) Sulphuric acid
   (C) Chlorine
   (D) Sodium bisulphite
   Answer: Option A

158. Which catalyst is used in the manufacture of ethylene oxide by oxidation of ethylene?
   (A) AgO
   (B) Al₂O₃
   (C) ZnCl₂
   (D) Fe₂O₃
   Answer: Option A

159. Hydrogen gas is not produced commercially (for nitrogenous fertiliser manufacture) by
   (A) Iron-steam reaction
   (B) Electrolysis of water
   (C) Steam reforming of naphtha
   (D) Its cryogenic separation from coke oven gas
   Answer: Option A

160. Multistage catalytic converter is not used in the
   (A) Conversion of SO₂ to SO₃
   (B) NH₃ synthesis reaction
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)
   Answer: Option B

161. _______ is an ore of lead.
   (A) Quartz
   (B) Galena
   (C) Siderite
   (D) Chalcopyrite
   Answer: Option B

162. Carbon tetrachloride (CCl₄) is the starting raw material for the manufacture of
   (A) Trichloroethylene
   (B) Perchloroethylene
   (C) Parathion
   (D) Methanol
163. Presence of H₂S in raw water (to be chlorinated) results in the
   (A) Reduced softening capacity of zeolite
   (B) Increased dosage of chlorine to provide a disinfecting residual in the water
   (C) Easy removal of its hardness
   (D) None of these
   Answer: Option B

164. Which allotrope of sulphur is insoluble in carbon disulphide?
   (A) Rhombic sulphur
   (B) Monoclinic sulphur
   (C) Plastic sulphur
   (D) Milk of sulphur
   Answer: Option C

165. Platinum catalyst used in the earlier days of sulphuric acid manufacture by contact process
     suffers from the drawback like
     (A) High cost
     (B) Fragile nature
     (C) Easy poisoning tendency
     (D) All (A), (B) and (C)
     Answer: Option D

166. Refractory bricks burnt at very high temperature have got
     (A) Greater resistance to corrosion by slags
     (B) Less resistance to corrosion by slags
     (C) High spalling tendency
     (D) None of these
     Answer: Option A

167. Separation of fresh water from sea water can be done by the __________ operation.
     (A) Osmosis
     (B) Reverse osmosis
     (C) Absorption
     (D) Adsorption
     Answer: Option B

168. Main constituent of limestone is
     (A) CaCO₃
     (B) MgCO₃
     (C) Na₂CO₃
     (D) CaSO₄
     Answer: Option A

169. The main use of activated carbon in water treatment is to control
     (A) Bacterial growth
     (B) Taste and odour
     (C) Turbidity
     (D) None of these
     Answer: Option B

170. Sulphuric acid saturated with SO₃ is called
     (A) Concentrated H₂SO₄
     (B) Sulphurous acid
     (C) Oleum
     (D) None of these
     Answer: Option C

171. Pick out the wrong statement.
     (A) Dry process is used for the manufacture of cement, when the raw material is blast furnace slag
     (B) Portland cement is made employing wet process
     (C) Gypsum is added to Portland cement to lengthen its setting time
     (D) None of these
     Answer: Option D
172. Hydrogenation of oil does not
   (A) Remove double bonds
   (B) Raise its melting point
   (C) Improve its resistance to oxidation
   (D) None of these
   Answer: Option D

173. Fatty material used in soap making is
   (A) Fatty acid
   (B) Fatty alcohols
   (C) Tallow
   (D) Detergents
   Answer: Option C

174. Stereospecific agents are exemplified by
   (A) Radiation
   (B) Supported metal oxide catalysts
   (C) Ziegler catalysts
   (D) All (A), (B) & (C)
   Answer: Option D

175. The enzyme which converts starch into the disaccharides maltose is
   (A) Diastase
   (B) Maltase
   (C) Yeast
   (D) None of these
   Answer: Option A

176. Percentage of alcohol in beer may be around __________ percent.
   (A) 2-8
   (B) 18-23
   (C) 27-32
   (D) 1-4
   Answer: Option A

177. __________ of rubber decreases after its vulcanisation.
   (A) Resistance to the action of organic solvent
   (B) Tackiness
   (C) Maximum service temperature
   (D) Tensile strength
   Answer: Option B

178. Salt is added in the kettle during soap manufacture to separate
   (A) Soap from lye
   (B) Glycerine from lye
   (C) The metallic soap
   (D) The unsaponified fat from soap
   Answer: Option A

179. Reaction of an alcohol with organic acid is called the __________ reaction.
   (A) Saponification
   (B) Esterification
   (C) Neutralisation
   (D) Acidification
   Answer: Option B

180. The main product of high temperature carbonisation of coal is
   (A) Coke
   (B) Ammonia
   (C) Tar
   (D) Phenol
   Answer: Option A

181. The major use of butadiene is
182. Nylon-66 is so named because the
(A) Average degree of polymerisation of the polymer is 1966
(B) Number of carbon atoms between two nitrogen atoms are 6
(C) Number of nitrogen atoms between two carbon atoms are 6
(D) Polymer was first synthesised in 1966
Answer: Option A

183. Which glass is usually used in optical work?
(A) Lead glass
(B) High silica (borosilicate) glass
(C) Photo-sensitive glass
(D) Fibre glass
Answer: Option C

184. Bitterns is a/an
(A) Unsaturated fat
(B) Starting material for the production of iodine
(C) By-product of chlor-alkali industry
(D) None of these
Answer: Option D

185. Starting material for the commercial production of ethyl alcohol in India is
(A) Rice
(B) Molasses
(C) Fruit of Mahua tree
(D) Maize
Answer: Option B

186. Permanent hardness of water can be removed by
(A) Simply boiling
(B) Adding alum
(C) Passing it through cation & anion exchangers
(D) All (A), (B) and (C)
Answer: Option C

187. ________ acid is an unsaturated fatty acid.
(A) Palmitic
(B) Oleic
(C) Stearic
(D) Oxalic
Answer: Option B

188. The yield of tar from high temperature carbonisation of dry coal is about ________ percent.
(A) 3
(B) 12
(C) 22
(D) 0.3
Answer: Option A

189. Which of the following paper does not require a filler during manufacture?
(A) Bond paper
(B) Writing paper
(C) Blotting paper
(D) Coloured paper
Answer: Option C

190. Main product in calcium carbide-water reaction is
(A) Ca(OH)₂
191. **Fourdrinier machine is used in the manufacture of**
   (A) Sugar
   (B) Paper
   (C) Alcohol from molasses
   (D) Phenol formaldehyde
   Answer: Option B

192. **The main aim behind cooling the digested chip at the bottom portion of the digestor by injecting cold black liquor is to**
   (A) Avoid mechanical weakening of fibre
   (B) Remove lignin by way of crystallisation
   (C) Increase the cellulose content
   (D) None of these
   Answer: Option A

193. **A mineral is termed as 'ore', if**
   (A) A metal can be economically extracted from it
   (B) It contains ≥ 40% metal
   (C) The metal present in it is costly
   (D) All (A), (B) and (C)
   Answer: Option A

194. **Thermoplastic materials**
   (A) Do not soften on application of heat
   (B) Are heavily branched molecules
   (C) Are solvent insoluble
   (D) None of these
   Answer: Option D

195. **Na₂CO₃ is called**
   (A) Washing soda
   (B) Soda ash
   (C) Plaster of Paris
   (D) Calcite
   Answer: Option B

196. **Flexible foam (for mattresses) is usually made of**
   (A) PVC
   (B) Silicone
   (C) Polyurethanes
   (D) Polyamides
   Answer: Option C

197. **Hydrogenation of oil takes place in a/an _________ reactor.**
   (A) Autothermal
   (B) Trickle bed
   (C) Plug flow
   (D) None of these
   Answer: Option B

198. **Which of the following is an additional step in the manufacture of paper from bagasse as compared to that from bamboo?**
   (A) Depithing
   (B) Digestion
   (C) Bleaching
   (D) None of these
   Answer: Option A

199. **Salt is the basic raw material for the manufacture of**
   (A) Cement
200. The most widely used coagulant for removing suspended impurities from water is
(A) Bleaching powder
(B) Chlorine
(C) Calcium sulphate
(D) Alum
Answer: Option D

201. Glycerine is recovered from lye by
(A) Evaporation followed by vacuum distillation
(B) Liquid extraction technique
(C) Extractive distillation technique
(D) None of these
Answer: Option A

202. Iron ore hematite is concentrated using
(A) Electromagnetic separation mainly
(B) Gravity separation
(C) Froth floatation
(D) Roasting
Answer: Option B

203. Which of the following is not an antibiotic?
(A) Penicillin
(B) Streptomycin
(C) Tetracycline
(D) Quinine
Answer: Option D

204. Which of the following is an unsaturated fatty acid?
(A) Lauric acid
(B) Palmitic acid
(C) Stearic acid
(D) Oleic acid
Answer: Option D

205. Enzymes are organic catalysts used in the _________ reactions.
(A) Chemical
(B) Biochemical
(C) Photochemical
(D) Electrochemical
Answer: Option B

206. Percentage of glycerine present in the spent lye obtained during soap manufacture is about
(A) 0.5
(B) 5
(C) 20
(D) 35
Answer: Option B

207. Rosin soap is added during paper manufacture to
(A) Impart adhesive properties
(B) Improve opacity
(C) Impart resistance to penetration by liquids
(D) None of these
Answer: Option C

208. High purity nitrogen is used in
(A) Making protective gas (95% N₂ + 5% H₂) for annealing of cold rolled steel strip coils
(B) Fire fighting purposes
(C) Both (A) & (B)
209. Solvay process is used for the manufacture of
   (A) Caustic soda 
   (B) Soda ash 
   (C) Caustic potash 
   (D) Soda lime 
   Answer: Option B

210. The main use of HCl is in the
   (A) Drilling of petroleum wells and pickling of steel sheets 
   (B) Manufacture of cationic detergent 
   (C) Treatment of spent fuel of nuclear reactor 
   (D) None of these 
   Answer: Option A

211. The purpose of tanning in leather industry is to
   (A) Stiffen the leather 
   (B) Smoothen the leather 
   (C) Make it flexible 
   (D) Impart water resistance 
   Answer: Option A

212. Sand and ________ is fused at 1300°C, to produce sodium silicate.
   (A) Limestone 
   (B) Soda ash 
   (C) Coke 
   (D) Sodium sulphate 
   Answer: Option B

213. Glycerine is a by-product of the ________ industry.
   (A) Soap 
   (B) Detergent 
   (C) Oil hydrogenation 
   (D) Paint 
   Answer: Option A

214. The chamber process is
   (A) Preferred over contact process for producing 98 to 100% H₂SO₄ and various oleums 
   (B) Non-catalytic and operates only on pyrites 
   (C) A batch process for directly producing high strength (98 to 100%) H₂SO₄ 
   (D) None of these 
   Answer: Option D

215. Refractory bricks having high thermal conductivity is desirable, when it is to be used in the
   (A) L.D. converter 
   (B) Blast furnace 
   (C) Rotary kiln 
   (D) Recuperator 
   Answer: Option D

216. Hydrophilic group of a soap or detergent solution is
   (A) Water hating 
   (B) Soil loving 
   (C) Water loving 
   (D) None of these 
   Answer: Option C

217. Bleaching powder (chemically known as calcium chloro hypochlorite) is commercially produced by the action of chlorine on
   (A) Slaked lime 
   (B) Soda lime 
   (C) Calcium perchlorate 
   (D) None of these
218. Haemoglobin is a/an
   (A) Amino acid
   (B) Biological catalyst
   (C) Protein
   (D) Enzyme
   Answer: Option C

219. The amount of benzene present in pure Benzol is about _________ percent.
   (A) 30
   (B) 50
   (C) 70
   (D) 90
   Answer: Option C

220. Oxygen is separated by distillation from air after its liquefaction. The boiling point of oxygen is about _________ °C.
   (A) -83
   (B) -183
   (C) -196
   (D) -218
   Answer: Option B

221. Pick out the wrong statement.
   (A) Cold rubber (SBR) is superior as compared to hot rubber (SBR)
   (B) Polymerisation temperature can modify the properties of SBR
   (C) Production of cold SBR employs lower pressure as compared to that of hot SBR
   (D) None of these
   Answer: Option D

222. Esterification reaction produces
   (A) Detergent
   (B) Vanaspati
   (C) Soap
   (D) Mercaptans
   Answer: Option C

223. Enamels
   (A) Give good glossy finish
   (B) Are same as varnish
   (C) Are prepared from non-drying oil
   (D) Do not contain pigment
   Answer: Option A

224. Chlorine gas is produced by the electrolysis of brine (NaCl solution with solid NaCl make up) in mercury electrolytic cell. Which of the following is the anodic reaction?
   (A) Oxidation of Na⁺ ions
   (B) Oxidation of Cl⁻ ions
   (C) Reduction of Na⁺ ions
   (D) Reduction of Cl⁻ ions
   Answer: Option B

225. Permanent hardness of water can be removed by
   (A) Addition of soda ash to it
   (B) Treating it with zeolites
   (C) Passing it through sodium hexametaphosphate
   (D) All (A), (B), and (C)
   Answer: Option D

226. Sulphur addition in soap is done to
   (A) Improve the soap texture
   (B) Cure pimples & dandruff
   (C) Fasten lather formation
   (D) Increase its cleansing action
227. Polymerisation product of C₂F₄ (carbon tetrafluoride) is called P.T.F.E (poly chloro tetra fluoro ethylene). It is also called
(A) Polyurethane
(B) Silicone
(C) Teflon
(D) Epoxy resin
Answer: Option C

228. Glass is
(A) Mainly CaO
(B) Subjected to galvanising
(C) A super cooled liquid
(D) All (A), (B) and (C)
Answer: Option C

229. CaCl(OCl) is the chemical formula of
(A) Hypo
(B) Bleaching powder
(C) Plaster of Paris
(D) Aqua regia
Answer: Option B

230. In sulphate pulp manufacture, the pressure and temperature in the digestor is
(A) 10 atm., 800 °C
(B) 10 atm., 170-180°C
(C) 1 atm., 170 - 180°C
(D) 1 atm., 800°C
Answer: Option B

231. Pick out the wrong statement.
(A) Chamber process of sulphuric acid manufacture produces pure acid of concentration < 80%
(B) Contact process of sulphuric acid manufacture produces pure acid of concentration ≥ 98%
(C) 75% oleum can be produced by distillation of 20% oleum
(D) Contact process of sulphuric acid manufacture uses nickel as the catalyst
Answer: Option D

232. The basic constituent of vegetable oils is
(A) Triglyceride
(B) Fatty acids
(C) Fatty alcohol
(D) Mono esters
Answer: Option A

233. Bio-degradable detergents
(A) Can be readily oxidised
(B) Pose problem in sewerage plant
(C) Have an isoparaffinic structure
(D) Should not be used as it spoils the cloth
Answer: Option A

234. Fusion of bauxite and __________ produces high alumina cement.
(A) Alum
(B) Limestone
(C) Coke
(D) Quartz
Answer: Option B

235. Laboratory glass wares which reacts with hydrofluoric acid, are made of the __________ glass.
(A) Lead
(B) Borosilicate
(C) Soda lime
(D) Alkali silicate
236. ________ are used as corrosion inhibitor for iron & steel in aqueous solutions.
   (A) Phosphates
   (B) Chromates
   (C) Sulphates
   (D) Bi-carbonates
   Answer: Option B

237. Polymethyl methacrylate (PMMA) is known as
   (A) Bakelite
   (B) Teflon
   (C) Perspex
   (D) Nylon-6
   Answer: Option C

238. Which is the main reducing agent during production of iron from iron ore in a blast furnace?
   (A) C
   (B) CO
   (C) CO₂
   (D) H₂
   Answer: Option B

239. Function of thinner in a paint is to
   (A) Accelerate the oxidation of oil
   (B) Prevent gelling of the paint
   (C) Suspend pigments & dissolve film forming materials
   (D) Form a protective film
   Answer: Option C

240. Which of the following is not responsible for causing permanent hardness of water?
   (A) Ca(HCO₃)₂
   (B) CaCl₂
   (C) MgCl₂
   (D) None of these
   Answer: Option A

241. Metallic soap is ________ salt of fatty acids.
   (A) Sodium
   (B) Potassium
   (C) Both sodium & potassium
   (D) Aluminium or calcium
   Answer: Option D

242. Neon gas is
   (A) Flammable in nature
   (B) Used in color discharge tube
   (C) Filled in lamps having tungsten filament
   (D) All (A), (B) and (C)
   Answer: Option B

243. DDT stands for
   (A) Diethyl-diphenyl-trichloromethane
   (B) Dichloro-diphenyl-trichloromethane
   (C) diphenyl-dichloro-trichloromethane
   (D) Dichloro-diphenyl-trichloroethane
   Answer: Option D

244. Which of the following contains least amount of N₂?
   (A) Coke oven gas
   (B) Blast furnace gas
   (C) Producer gas
   (D) Water gas (blue gas)
   Answer: Option A
245. Fish contains about __________ percent oil.
   (A) 5
   (B) 10
   (C) 20
   (D) 35
   Answer: Option C

246. Oxidation of SO₂ to SO₃ is favoured by
   (A) Low temperature and low pressure
   (B) Low temperature and high pressure
   (C) High temperature and low pressure
   (D) High temperature and high pressure
   Answer: Option B

247. Solvent extracted oil
   (A) Has low free fatty acid content
   (B) Is odourless
   (C) Has more of unsaturates
   (D) None of these
   Answer: Option D

248. Exothermic condensation reaction of monochlorobenzene with chloral in presence of 20% oleum as catalyst produces DDT. The reaction temperature is maintained at __________ °C.
   (A) 15-30
   (B) 90-100
   (C) 250-300
   (D) < 0
   Answer: Option A

249. __________ is obtained as a by-product in the manufacture of sodium hydroxide using brine.
   (A) Chlorine
   (B) Ammonium chloride
   (C) Sodium carbonate
   (D) Sodium bi-carbonate
   Answer: Option A

250. Paper pulp produced by Kraft/sulphate process is
   (A) Bleached easily
   (B) Dull white in color
   (C) Strong fibrous
   (D) Dark colored
   Answer: Option C

251. Phenol is mainly used
   (A) To produce benzene
   (B) To produce phenol formaldehyde
   (C) To produce polyester resin
   (D) As a plasticiser for unsaturated polyester
   Answer: Option B

252. White phosphorous is stored under water, because
   (A) It does not react with water
   (B) It is poisonous
   (C) Its kindling temperature in dry air is very low
   (D) It is unstable
   Answer: Option C

253. Phthalic anhydride is used
   (A) In making PVC
   (B) As plasticisers
   (C) In insecticides manufacture
   (D) For making nylon-6
   Answer: Option B
254. Styrene is produced from ethyl benzene by the process of
(A) Dehydrogenation
(B) Oxidation
(C) Alkylation
(D) Dehydration
Answer: Option A

255. ________ glass has the lowest co-efficient of thermal expansion and hence is more heat resistant.
(A) Pyrex
(B) Soda lime
(C) Lead
(D) High silica
Answer: Option A

256. Pure rectified spirit contains about __________ percent alcohol.
(A) 45
(B) 70
(C) 95
(D) 99.5
Answer: Option C

257. Which is the most suitable dye for synthetic fibres?
(A) Acid dye
(B) Azoic dye
(C) Pigment dye
(D) Mordant dye
Answer: Option A

258. The catalyst used in the manufacture of DDT (from chloral and chlorobenzene) is
(A) Dilute \(H_2SO_4\)
(B) Oleum
(C) Ultraviolet light
(D) None of these
Answer: Option B

259. Nickel is not used as a catalyst in the
(A) Fischer-Tropsch process
(B) Shift conversion
(C) Hydrogenation of oil
(D) Ostwald’s process of \(HNO_3\) manufacture
Answer: Option D

260. Solvay process as compared to dual process (i.e. modified Solvay process).
(A) Can use low grade brine
(B) Has less corrosion problems
(C) Involves higher investment in \(NH_3\) recovery units than that for crystallisation units for \(NH_4Cl\)
(D) Both (B) and (C)
Answer: Option D

261. Hard water
(A) Does not affect the lather formation by soap
(B) Is not unfit for drinking purpose
(C) Pollutes the water stream
(D) All (A), (B) and (C)
Answer: Option B

262. Insulin is an __________ drug.
(A) Anti-malarial
(B) Anti-TB
(C) Antibiotic
(D) None of these
Answer: Option D
263. Pick out the wrong statement pertaining to the soap manufacture.
   (A) Transparent soaps are made by cold process
   (B) Organic pigments are used as colouring materials in the soap manufacture
   (C) Both laundry as well as toilet soaps are manufactured by hot process
   (D) Colourless rosin is used in the manufacture of laundry soaps
   Answer: Option A

264. Molasses is the starting material for the production of
   (A) Alcohol
   (B) Essential oil
   (C) Fatty acids
   (D) Massecuite
   Answer: Option A

265. Zeolite removes both temporary as well as permanent hardness of water by precipitating calcium and magnesium present in water as insoluble zeolites. Used zeolite is regenerated by flushing with the solution of
   (A) Calcium sulphate
   (B) Sodium chloride
   (C) Sodium sulphate
   (D) Magnesium chloride
   Answer: Option B

266. Prussian blue is chemically represented by
   (A) FeO.TiO₂
   (B) Ca SO₄ . 2H₂O
   (C) Fe₄[Fe (CN)₆]₃
   (D) AlF₃ . 3N₃F
   Answer: Option C

267. Purity of oxygen used for blowing in steel making L.D. converter is 99.5%. The boiling point of oxygen is about _________ °C.
   (A) -53
   (B) -103
   (C) -183
   (D) -196
   Answer: Option C

268. Pick out the wrong statement.
   (A) Azoic dyes are mostly applied on cotton fabrics
   (B) Basic dyes (e.g. amino derivatives) are applied mostly to paper
   (C) Mordant dyes are applied mainly to wools
   (D) None of these
   Answer: Option D

269. Frasch process is for
   (A) Making oxygen
   (B) Producing helium
   (C) Mining sulphur
   (D) Making nitrogen
   Answer: Option C

270. Metallic soap (e.g. aluminium or calcium salts of fatty acids) can be used
   (A) As a lubricant
   (B) As a rust preventive
   (C) In hard water for cleaning of cloth
   (D) As a foam depressant in distillation column
   Answer: Option A

271. Mercury electrolytic cells are preferred over diaphragm electrolytic cell (for production of caustic soda), as it
   (A) Has larger production capacity per unit cell
   (B) Consumes less power per ton of Cl₂ produced
   (C) Produces high purity (70%) caustic soda directly
   (D) All (A), (B) and (C)
272. Air used in aerobic fermentation must be sterilized, otherwise the
(A) Recovery of product will be difficult
(B) Contamination of pure culture would result
(C) Uniformity of product cannot be achieved
(D) None of these
Answer: Option B

273. The drug used in contraceptives is
(A) Sulfadiazine
(B) Mestranol
(C) Methyl salicylate
(D) Penicillin
Answer: Option B

274. Lime and soda ash are added to water to remove
(A) Bicarbonates & sulphates of calcium and magnesium
(B) Undesirable taste and odour
(C) Bacteria
(D) Its corrosiveness
Answer: Option A

275. Neoprene is a
(A) Monomer
(B) Synthetic rubber
(C) Polyester
(D) None of these
Answer: Option B

276. Process conditions in fermentator used for production of penicillin is
(A) 25°C, 2 atm
(B) 50°C, 10 atm
(C) 30°C, 200 mm Hg (absolute)
(D) 90°C, 45 atm
Answer: Option A

277. Gun powder, which is an explosive comprises of charcoal, sulphur and
(A) Glycerine
(B) Salt petre
(C) Nitro glycerine
(D) Dynamite
Answer: Option B

278. Bromides contained in hot mother liquor is treated with _________ during manufacture of bromine from sea water.
(A) SO₃
(B) Cl₂
(C) NH₃
(D) SO₂
Answer: Option B

279. High temperature carbonisation of coal takes place at _________ °C.
(A) 2000
(B) 700
(C) 1100
(D) < 500
Answer: Option C

280. High magnesia lime is added to hot sugar cane juice (during the manufacture of sugar) to
(A) Flocculate the impurities
(B) Facilitate fast filtration
(C) Both (A) and (B)
(D) Neither (A) nor (B)
Answer: Option C
281. Viscose rayon is chemically
(A) Cellulose nitrate
(B) Regenerated cellulose nitrate
(C) Cellulose acetate
(D) Regenerated cellulose acetate
Answer: Option D

282. Mannheim furnace is used in the manufacture of
(A) Hydrochloric acid
(B) $\text{H}_2\text{SO}_4$ by Chamber process
(C) Calcium carbide
(D) Corundum
Answer: Option A

283. Mercury cells for caustic soda manufacture, compared to diaphragm cells
(A) Require lower initial investment
(B) Require more power
(C) Produce lower concentration NaOH
(D) None of these
Answer: Option D

284. For the hydrogenation of oils, ________ (i) ________ is commonly used as catalyst and
________ (ii) ________ is a catalyst poison.
(A) (i) platinum (ii) sulphur
(B) (i) palladium (ii) oxygen
(C) (i) nickel (ii) sulphur
(D) (i) nickel (ii) oxygen
Answer: Option C

285. Sucrose content in the raw juice extracted from sugar cane is about ________ percent.
(A) 1 - 2
(B) 15 - 20
(C) 50 - 60
(D) 80 - 85
Answer: Option B

286. Varnish does not contain
(A) Pigment
(B) Thinner
(C) Dryer
(D) Anti-skimming agent
Answer: Option A

287. Builders are added in soap to act as
(A) Cleaning power booster
(B) Anti-redeposition agent
(C) Corrosion inhibitor
(D) Fabric brightener
Answer: Option A

288. Which of the following coals has the highest calorific value?
(A) Lignite
(B) Sub-bituminous
(C) Anthracite
(D) Peat
Answer: Option C

289. Which of the following is the most adverse factor challenging the choice of mercury electrolytic cell process for the production of caustic soda?
(A) High cost of mercury
(B) High specific gravity of mercury
(C) Non-availability of high purity mercury
(D) Pollution of water stream by mercury
Answer: Option D
290. Molecular weights of polymers are in the range of
(A) $10^2 - 10^5$
(B) $10^5 - 10^9$
(C) $10^9 - 10^7$
(D) $10^9 - 10^{11}$
Answer: Option C

291. Ceramics are produced from silicates or clayish materials: Which of the following is not a ceramic material?
(A) Slag cement
(B) Glasses
(C) Porcelain/Potteries
(D) Teflon
Answer: Option D

292. Finely ground calcium aluminate & silicate is a/an
(A) Cermet
(B) Cement
(C) Abrasive
(D) Explosive
Answer: Option B

293. Phosphate rock is a raw material for the manufacture of
(A) Phosphoric acid
(B) Phosphorous
(C) Superphosphates
(D) All (A), (B) and (C)
Answer: Option D

294. Transportation of 35% oleum during winter suffers from the problem of freezing, which can be overcome by the addition of small quantity of
(A) Nitric acid
(B) Hydrochloric acid
(C) Methyl alcohol
(D) Formic acid
Answer: Option A

295. Which of the following is the second major component of cement?
(A) $\text{Al}_2\text{O}_3$
(B) $\text{SiO}_2$
(C) $\text{CaO}$
(D) $\text{Fe}_2\text{O}_3$
Answer: Option B

296. The main component of Pyrex glass is
(A) Zinc
(B) Lead
(C) Boron
(D) Selenium
Answer: Option B

297. Pick out the endothermic reaction out of the following.
(A) $\text{C} + \frac{1}{2}\text{O}_2 = \text{CO}$
(B) $\text{CO} + 3\text{H}_2 = \text{CH}_4 + \text{H}_2\text{O}$
(C) $\text{CaCO}_3 = \text{CaO} + \text{CO}_2$
(D) $\text{CO} + \frac{1}{2}\text{O}_2 = \text{CO}_2$
Answer: Option C

298. Phosphoric acid is prepared from
(A) Cryolite
(B) Chalcopyrite
(C) Rock phosphate
(D) None of these
Answer: Option C
299. The terminology 'BTX' used in coal tar distillation industry refers to
(A) Benzol-toluol-xylol
(B) Benzol-toluene-xylene
(C) Benzene-toluol-xylol
(D) Benzene-toluene-xylene
Answer: Option D

300. Graphite is a/an
(A) Electrical insulator
(B) Allotrope of carbon
(C) Moderator used in nuclear reactor
(D) Both (B) and (C)
Answer: Option D

301. Pitch (a product of coal tar distillation) is always mixed with creosote oil, when it is to be burnt in a burner, because
(A) Its calorific value is very less
(B) Tar neutralises the residual acids present in pitch
(C) It reduces viscosity and imparts fluidity for its transportation through pipelines at economic pressure drop
(D) All (A), (B) and (C)
Answer: Option C

302. Kaolin is a/an
(A) Refractory material
(B) Synthetic resin
(C) Artificial abrasive
(D) Blue pigment
Answer: Option A

303. Calcination of limestone is not done in a ________ kiln for producing lime.
(A) Vertical shaft
(B) Rotary
(C) Fluidised bed
(D) Fixed bed
Answer: Option D

304. In the manufacture of viscose rayon, the raw material used industrially is
(A) Eucalyptus wood
(B) Bamboo
(C) Bagasse
(D) Fine teak wood
Answer: Option D

305. Starting raw material for the manufacture of alum is
(A) Alumina
(B) Gypsum
(C) Bauxite
(D) Ammonium bicarbonate
Answer: Option C

306. Plasticisers are added to paints to
(A) Make it corrosion resistant
(B) Make glossy surface
(C) Give elasticity & prevent cracking of the film
(D) Increase atmospheric oxidation
Answer: Option C

307. Function of sodium thiosulphate (hypo) in development of photographic film/plate is to
(A) Brighten the faint images
(B) Remove metallic silver
(C) Convert silver chloride to silver
(D) Remove unexposed silver halide
Answer: Option D
308. BHC (Benzene hexachloride) is made by the chlorination of benzene
   (A) Which is an addition reaction
   (B) Which is a substitution reaction
   (C) In absolute dark
   (D) In presence of sunlight
   Answer: Option A

309. The combustion reaction, $C + O_2 = CO_2$, is
   (A) Exothermic
   (B) Endothermic
   (C) Autocatalytic
   (D) None of these
   Answer: Option A

310. __________ iron is the purest form of iron.
   (A) Cast
   (B) Wrought
   (C) Pig
   (D) High silicon
   Answer: Option B

311. Mercury electrolytic cell produces 50-70\% NaOH solution. Its operating temperature is __________ °C.
   (A) 25
   (B) 60-70
   (C) 150-200
   (D) 250-300
   Answer: Option B

312. Nitro-glycerine absorbed in wood flour, sodium nitrate or ammonium nitrate is commercially used as controlled explosive called dynamite. The raw material used for its manufacture are glycerine, nitric acid and
   (A) Sulphuric acid
   (B) Phosphoric acid
   (C) Hydrochloric acid
   (D) Hydrofluoric acid
   Answer: Option A

313. Styrene-butadiene-rubber (SBR) as compared to natural rubber has
   (A) Poorer tensile strength
   (B) Poorer resistance to oxidation
   (C) Greater amount of heat build-up under heavy loading
   (D) All (A), (B) and (C)
   Answer: Option D

314. Neoprene is chemically known as
   (A) Polybutadiene
   (B) Styrene butadiene rubber (SBR)
   (C) Polyurethane
   (D) Polychloroprene
   Answer: Option D

315. Impurities present in brine is normally removed by treatment with
   (A) NH$_3$ and CO$_2$
   (B) Lime and soda ash
   (C) Lime, ammonia and carbon
   (D) All (A), (B) and (C)
   Answer: Option D

316. Platinum is a versatile catalyst for many processes in chemical industries. It is highly prone to be poisoned by the presence of
   (A) Carbon
   (B) Arsenic
   (C) Lead
317. **Producer gas consists mainly of**
   (A) CO, CO\(_2\), N\(_2\), H\(_2\)
   (B) CO, H\(_2\)
   (C) H\(_2\), CH\(_4\)
   (D) C\(_2\)H\(_2\), CO\(_2\), H\(_2\)
   Answer: Option A

318. **Pick out the true statement pertaining to water treatment.**
   (A) Slow sand filters can remove colour completely
   (B) Activated carbon can be used for taste & odour control without subsequent filtration
   (C) Application of activated carbon reduces the temporary hardness of water
   (D) Normally, the turbidity is removed by adding a coagulant prior to sedimentation
   Answer: Option D

319. **Commonly used glass is known as the __________ glass.**
   (A) Flint
   (B) Hard
   (C) Pyrex
   (D) Soda
   Answer: Option D

320. **Consider the production of ammonia from methene and air as raw materials. The catalysts used are: (i) __________ for steam reforming of methane and (ii) __________ for ammonia synthesis.**
   (A) (i) Ni/Al\(_2\)O\(_3\); (ii) Cu - ZnO/Al\(_2\)O\(_3\)
   (B) (i) Fe/Al\(_2\)O\(_3\); (ii) Cu - ZnO/Al\(_2\)O\(_3\)
   (C) (i) Ni/Al\(_2\)O\(_3\); (ii) Fe/Al\(_2\)O\(_3\)
   (D) (i) Fe/Al\(_2\)O\(_3\); (ii) Ni/Al\(_2\)O\(_3\)
   Answer: Option C

321. **Which of the following is not a raw material used for the manufacture of ordinary glass?**
   (A) Iron oxide
   (B) Soda ash
   (C) Limestone
   (D) Silica
   Answer: Option A

322. **Which of the following processes does not produce Cl\(_2\) as a co-product during the manufacture of caustic soda?**
   (A) Diaphragm electrolytic cell process
   (B) Mercury electrolytic cell process
   (C) Lime-soda process
   (D) None of these
   Answer: Option C

323. **L.D. converter is used in the production of**
   (A) Pig iron
   (B) Steel
   (C) Copper
   (D) Zinc
   Answer: Option B

324. **Fermentator temperature during production of alcohol from molasses is around __________ °C.**
   (A) 5
   (B) 30
   (C) 130
   (D) 300
   Answer: Option B

325. **Raw materials used for producing __________ cement does not contain iron oxide.**
   (A) Waterproof
326. Conversion of CO to CO₂ by steam in presence of a catalyst is called
   (A) Steam reforming  
   (B) Shift conversion  
   (C) Steam gasification  
   (D) None of these  
   Answer: Option B

327. Saponification value/number of an oil or fat is a measure of its  
   (A) Fatty acid content  
   (B) Degree of unsaturation of the fatty acids present in it  
   (C) Average molecular weight  
   (D) Insoluble fatty acid content  
   Answer: Option C

328. Cooking liquor in case of sulphite process is  
   (A) Sodium sulphite and sodium bisulphite  
   (B) Magnesium sulphite and free SO₂ in acid medium  
   (C) Magnesium sulphate and magnesium bicarbonate  
   (D) None of these  
   Answer: Option A

329. Salt cake is chemically represented by  
   (A) Na₂SO₄  
   (B) CaSO₄ · ½H₂O  
   (C) MgSO₄  
   (D) BaSO₄  
   Answer: Option A

330. Which of the following is not a pyrite ore?  
   (A) Celestite  
   (B) Galena  
   (C) Gypsum  
   (D) Siderite  
   Answer: Option D

331. Rotary kiln is not involved in the production of  
   (A) Cement  
   (B) Lime from limestone  
   (C) Slaked lime from quick lime  
   (D) None of these  
   Answer: Option C

332. __________ is an ore concentrating metallurgical process involving a chemical change.  
   (A) Electromagnetic separation  
   (B) Froth floatation  
   (C) Roasting  
   (D) None of these  
   Answer: Option C

333. Fusel oil is a/an  
   (A) Essential oil  
   (B) Extract from medicinal herbs  
   (C) Mixture of higher molecular weight alcohols (a by-product obtained during production of alcohol from molasses).  
   (D) None of these  
   Answer: Option C

334. Solvent used for extraction of oil is  
   (A) Hexane  
   (B) Methyl ethyl ketone
335. Titanium dioxide is a/an ________ colour pigment.
   (A) White
   (B) Black
   (C) Yellow
   (D) Blue
   Answer: Option A

336. Bordeaux mixture is a/an
   (A) Fertiliser
   (B) Inorganic fungicide
   (C) Insecticide
   (D) Explosive
   Answer: Option B

337. Concentration of NaOH solution produced by mercury electrolytic cell is about ________ percent.
   (A) 10
   (B) 25
   (C) 50
   (D) 98
   Answer: Option C

338. The most stable allotropic form of phosphorous is the ________ phosphorous.
   (A) White
   (B) Black
   (C) Yellow
   (D) Red
   Answer: Option B

339. Type of glass used in optical work is the ________ glass.
   (A) Soda-lime
   (B) Fibre
   (C) Lead
   (D) Borosilicate
   Answer: Option C

340. Commercial production of calcium carbide requires limestone and ________ as raw materials.
   (A) Coke
   (B) Sand
   (C) Soda ash
   (D) Fuel oil
   Answer: Option B

341. Esterification reaction
   (A) Produces soap
   (B) Is reversible
   (C) Is a reaction between an alcohol and an organic acid
   (D) All (A), (B) and (C)
   Answer: Option D

342. Bleaching action of bleaching powder is due to its ________ properties.
   (A) Reducing
   (B) Oxidising
   (C) Disinfecting
   (D) None of these
   Answer: Option B

343. The most economical pulp for the production of newsprint would be the ________ pulp.
   (A) Ground-wood
   (B) Sulphate
344. Alkylbenzene sulfonate (ABS) is a
   (A) Detergent
   (B) Rubber
   (C) Pesticide
   (D) Polyester
   Answer: Option A

345. Very fine suspended and colloidal impurities are removed from water by a process called
   (A) Sedimentation
   (B) Coagulation
   (C) Disinfection
   (D) Softening
   Answer: Option B

346. Portland cement consists mainly of
   (A) CaO & SiO$_2$
   (B) SiO$_2$ & Al$_2$O$_3$
   (C) CaO & Al$_2$O$_3$
   (D) CaO & Fe$_2$O$_3$
   Answer: Option A

347. Ethyl alcohol cannot be produced
   (A) From waste sulphite substrate of paper mills
   (B) By Esterification and hydrolysis of ethylene
   (C) From molasses
   (D) None of these
   Answer: Option D

348. Fluorescent dyes are added in detergents to
   (A) Act as fabric brightener (by converting ultraviolet light to visible light) thereby improving the whiteness appearance of white fabrics
   (B) Attain distinctiveness from other brands
   (C) Act as tarnish inhibitor for metals like German silver
   (D) None of these
   Answer: Option A

349. Which of the following sugars is the sweetest?
   (A) Glucose
   (B) Fructose
   (C) Sucrose
   (D) Lactose
   Answer: Option B

350. Varnish does not contain
   (A) Thinner
   (B) Pigment
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option B

351. Temporary hardness of water can be removed by
   (A) Addition of alum (a coagulant)
   (B) Boiling
   (C) Filtration (through gravity sand filter)
   (D) Addition of lime
   Answer: Option B

352. Main constituents of natural rubber is
   (A) Polystyrene
   (B) Polyisoprene
   (C) Polybutadiene
353. **Epoxy resin**
   (A) Is a good adhesive
   (B) Is an elastomer
   (C) Cannot be used for surface coatings
   (D) Is a polyester
   Answer: Option A

354. **Deacon's method is used for the manufacture of**
   (A) Glauber's salt
   (B) Common salt
   (C) Chlorine
   (D) Graphite electrode
   Answer: Option C

355. **Hydrogenation of oil/fat does not**
   (A) Improve its resistance to rancid oxidation
   (B) Raise its melting point
   (C) Remove double bonds
   (D) None of these
   Answer: Option D

356. **Pick out the wrong statement.**
   (A) Hard glass which is used for making laboratory glass wares is a mixture of sodium borosilicate and aluminium borosilicate
   (B) Glass is decolorized during its manufacture by adding antimony oxide, manganese dioxide or arsenic oxide
   (C) Ordinary glass is represented chemically by \( \text{Na}_2\text{O} \cdot \text{CaO} \cdot 6\text{SiO}_2 \)
   (D) Red color is imparted to glass by addition of arsenic oxide
   Answer: Option D

357. **Mineral oils (e.g. petroleum oils) are preferred over fatty oils (e.g. mustard oil, ghee, tallow, palm oil, olive oil etc.) as a lubricant due to its**
   (A) Poor oxidation stability and high gum forming tendency
   (B) Greater tendency of decomposition at elevated temperature
   (C) Hydrolysis tendency in presence of water
   (D) All (A), (B) and (C)
   Answer: Option D

358. **Which of the following is not required in the manufacture of soda ash by Solvay process?**
   (A) Ammonia
   (B) Limestone
   (C) Nitric acid
   (D) None of these
   Answer: Option C

359. **Fusion of limestone and ________ produces high alumina cement.**
   (A) Sand
   (B) Bauxite
   (C) Quicklime
   (D) Calcite
   Answer: Option B

360. **Basic oxide is absent in ________ glass.**
   (A) Flint
   (B) Pyrex
   (C) Quartz
   (D) All (A), (B) & (C)
   Answer: Option C

361. **In the Lurgi coal gasifier**
   (A) Coking coals cannot be used
   (B) Low carbon conversion efficiency is achieved
362. Thermosetting materials
(A) Are cross-linked molecules
(B) Soften on application of heat
(C) Are solvent soluble
(D) None of these
Answer: Option A

363. Cement mainly contains
(A) CaO, SiO₂, Al₂O₃
(B) MgO, SiO₂, K₂O
(C) Al₂O₃, MgO, Fe₂O₃
(D) CaO, MgO, K₂O
Answer: Option A

364. Silicone is a/an
(A) Thermoplastic
(B) Inorganic polymer
(C) Monomer
(D) None of these
Answer: Option B

365. Claude process of gas liquefaction employs
(A) Merely compression of gas beyond its critical pressure
(B) Joule-Thomson expansion cooling
(C) Heat exchange with colder stream
(D) Adiabatic expansion against a piston or in a turbine
Answer: Option D

366. Liquor poisoning generally occurs due to the presence of __________ in it.
(A) Ethyl alcohol
(B) Impurities
(C) Methyl alcohol
(D) Carbonic acid
Answer: Option C

367. Cellulose percentage in bamboo fibre is about
(A) 10
(B) 20
(C) 50
(D) 85
Answer: Option C

368. The process involved in converting rubber into a thin sheet or coating it on fabric is called
(A) Extrusion
(B) Mastication
(C) Calendaring
(D) Vulcanisation
Answer: Option C

369. Neoprene is the trade name of
(A) Polyurethane
(B) Phenol formaldehyde
(C) Polychloroprene
(D) Styrene-butadiene rubber
Answer: Option C

370. Sulphur removal by heating of pyrite ore in presence of air is called its
(A) Reduction
(B) Roasting
(C) Calcination
(D) Smelting
371. Analgesic drugs are
   (A) Pain relievers
   (B) Antibiotics
   (C) Used in the treatment of T.B.
   (D) Used in the treatment of typhoid
   Answer: Option A

372. Alcohol content in freshly prepared natural and fortified wine may be respectively around __________ percent.
   (A) 7-14 and 14-30
   (B) 7-14 and 40-50
   (C) 14 - 30 and 40-50
   (D) 10 - 20 and 40 - 50
   Answer: Option A

373. __________ process is used for the manufacture of sodium carbonate by ammonia soda process.
   (A) Ostwald's
   (B) Bosch
   (C) Solvay
   (D) Haber's
   Answer: Option C

374. Saponification number of an oil or fat
   (A) Gives an idea about its molecular weight
   (B) Is inversely proportional to its molecular weight
   (C) Detects its adulteration
   (D) All (A), (B) & (C)
   Answer: Option D

375. Pick out the wrong statement. Iodine value of an oil or fat is
   (A) The number of grams of iodine taken up by 100 gm of oil or fat
   (B) A measure of its unsaturation
   (C) Helpful in finding its adulteration & its suitability for making soap
   (D) Independent of the type of oil, whether it is drying or non-drying
   Answer: Option D

376. Coke used for the production of calcium carbide should have
   (A) Low ash content
   (B) Low ignition temperature
   (C) High electrical resistivity
   (D) All (A), (B) and (C)
   Answer: Option D

377. Pick out the wrong statement.
   (A) Kraft method of pulp manufacture can process all types of fibrous raw materials
   (B) Digestion time for bagasse is less than that for wood base materials
   (C) Both temperature and pressure in the digestor is less in case of the sulphite method as compared to that in the sulphate method
   (D) None of these
   Answer: Option D

378. The gasification reaction represented by, \( C + H_2O = CO + H_2 \), is a/an __________ reaction.
   (A) Exothermic
   (B) Endothermic
   (C) Catalytic
   (D) Autocatalytic
   Answer: Option B

379. Hydrogenation of edible vegetable oils
   (A) Is an exothermic reaction
   (B) Increases their melting point
   (C) Is done in presence of nickel catalyst
380. \( \text{H}_2\text{S} \) is scrubbed from refinery gases by absorption using
(A) Dilute \( \text{H}_2\text{SO}_4 \)
(B) Ethanol amine
(C) Chilled water
(D) Tri-butyl phosphate
Answer: Option D

381. Which of the following is an endothermic reaction?
(A) Absorption of \( \text{SO}_3 \) in 98% \( \text{H}_2\text{SO}_4 \)
(B) \( \text{C} + \text{H}_2\text{O} = \text{CO} + \text{H}_2 \)
(C) Thermal dissociation of iron pyrites
(D) Both (B) and (C)
Answer: Option D

382. Pasteurisation of milk means
(A) Removal of fatty and albuminous substance from it
(B) Killing of organisms present in it by heating it at controlled temperature without changing its natural characteristics
(C) Inhibiting the growth of micro-organisms without killing them
(D) None of these
Answer: Option B

383. Alcohol is produced by the
(A) Oxidation of an aldehyde
(B) Hydrolysis of an ether
(C) Esterification of a fat
(D) None of these
Answer: Option B

384. Sucrose is a disaccharide consisting of
(A) Glucose and glucose
(B) Glucose and fructose
(C) Glucose and galactose
(D) Fructose and galactose
Answer: Option B

385. Alum \([\text{Al}_2(\text{SO}_4)_3] \) is used as a coagulant in water treatment to remove
(A) Colour
(B) Turbidity
(C) Bacteria
(D) All (A), (B) and (C)
Answer: Option D

386. All enzymes are made of
(A) Fats
(B) Carbohydrates
(C) Proteins
(D) Amino acids
Answer: Option C

387. Main constituent of dolomite is
(A) \( \text{CaCO}_3 \)
(B) \( \text{MgCO}_3 \)
(C) \( \text{K}_2\text{CO}_3 \)
(D) \( \text{Na}_2\text{CO}_3 \)
Answer: Option B

388. Essential oils are usually obtained using
(A) Steam distillation
(B) Extractive distillation
(C) Solvent extraction
(D) Leaching
389. Nickel is not used as a catalyst in the ________ reaction.
   (A) Shift conversion
   (B) Oil hydrogenation
   (C) Steaming reforming of naphtha
   (D) Ammonia cracking/dissociation
   Answer: Option A

390. Which of the following is an organometallic compound?
   (A) Isopropyl alcohol
   (B) Tetra-ethyl lead
   (C) Zeolite
   (D) Cumene
   Answer: Option B

391. Pick out the wrong statement.
   (A) Catalytic hydrogenation of carbon monoxide produces methyl alcohol
   (B) In nylon-6, the number 6 represents the total number of carbon atoms in the ring
   (C) Raw materials for DDT manufacture are benzene and chlorine
   (D) Ethanolamines are produced by using ammonia and ethylene oxide as raw material
   Answer: Option C

392. ________ is not a constituent of gun powder.
   (A) Carbon
   (B) Charcoal
   (C) Sulphur
   (D) Potassium nitrate
   Answer: Option A

393. Which one of the following is not likely to be a constituent of vegetable oils?
   (A) Citric acid
   (B) Oleic acid
   (C) Stearic acid
   (D) Glycerol
   Answer: Option A

394. Gelatine which is a nitrogenous organic protein is obtained by the hydrolysis of
   (A) Collagen
   (B) Tannin
   (C) Molasses
   (D) Carbohydrate
   Answer: Option A

395. Resistance to fusion of the refractory under a steady rising temperature condition is called
   (A) Spalling
   (B) Refractoriness
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option B

396. Zeolite is a/an
   (A) Naturally occuring clay which is capable of exchanging cations
   (B) Abrasive material
   (C) Catalyst used in shift conversion
   (D) None of these
   Answer: Option A

397. Setting of plaster of Paris is accompanied with
   (A) Hydration
   (B) Dehydration
   (C) Hydrolysis
   (D) Loss of CO₂
   Answer: Option A
398. Polycaprolactam is commercially known as
(A) Nylon-6
(B) Nylon-66
(C) Dacron
(D) Rayon
Answer: Option A

399. Cumene (isopropyl benzene) is made by
(A) Oxidation of naphthalene
(B) Propylene alkylation of benzene
(C) Polymerisation of a mixture of benzene & propylene
(D) None of these
Answer: Option B

400. Vanillin is a type of
(A) Anti-pyretic drug
(B) Food preservative
(C) Flavour
(D) Dye
Answer: Option C

401. Roasting of metallurgical ores is done mainly to
(A) Dehydrate it
(B) Sinter the ore
(C) Remove CO₂ & H₂O
(D) Remove arsenic & sulphur
Answer: Option D

402. Co-efficient of thermal expansion of glass is decreased by the addition of __________ during its manufacture.
(A) CaO
(B) MnO₂
(C) ZnO
(D) FeS
Answer: Option C

403. Black liquor is converted into white liquor by
(A) Evaporation and burning the concentrate followed by causticisation of products
(B) Multi-effect evaporation only
(C) Selective liquid extraction
(D) Extractive distillation
Answer: Option A

404. Massecuite is a terminology used in the __________ industry.
(A) Paint
(B) Oil hydrogenation
(C) Soap
(D) Sugar
Answer: Option D

405. Which of the following is not an abrasive material?
(A) Bakelite
(B) Pumice
(C) Corundum
(D) Carborundum
Answer: Option A

406. Wood charcoal is used for decolouration of sugar, because it __________ the coloured materials.
(A) Adsorbs
(B) Oxidises
(C) Reduces
(D) Converts
Answer: Option A
407. More than 100 percent of __________ is present in oleum.
(A) SO₃
(B) H₂SO₄
(C) H₂SO₃
(D) SO₂
Answer: Option B

408. Thermal pyrolysis of ethylene dichloride produces
(A) Trichloroethylene
(B) Vinyl chloride
(C) Ethanol amine
(D) Ethylene oxide
Answer: Option B

409. Oxidation of ortho-xylene in presence of __________ catalyst is done to produce phthalic anhydride on commercial scale.
(A) Nickel
(B) Vanadium
(C) Alumina
(D) Iron
Answer: Option B

410. Argon is the third largest constituent of air (followed by N₂ & O₂). Its percentage by volume in air is
(A) 0.14
(B) 0.34
(C) 0.94
(D) 1.4
Answer: Option C

411. Ca(OH)₂ is called
(A) Quicklime
(B) Slaked lime
(C) Limestone
(D) Gypsum
Answer: Option B

412. Diaphragm electrolytic cell as compared to mercury electrolytic cell
(A) Produces 70% NaOH solution
(B) Requires less specific power consumption for the production of chlorine
(C) Requires lesser investment for similar capacity
(D) All (A), (B) and (C)
Answer: Option C

413. Helium is produced on commercial scale from
(A) Air
(B) Natural gas
(C) Coke oven gas
(D) None of these
Answer: Option B

414. Concentration of sulphide ores is done usually by
(A) Roasting
(B) Smelting
(C) Froth floatation
(D) Electromagnetic separation
Answer: Option C

415. RDX (an explosive), which is more sensitive but less toxic than TNT, is chemically
(A) Cyclo trimethylene trinitramine
(B) Trinitro resorcinol
(C) Cyclo tetramethylene tetranitramine
(D) Trinitrobenzene
Answer: Option A
416. Bleaching of paper pulp is done with
   (A) Activated clay
   (B) Bromine
   (C) Chlorine or chlorine dioxide
   (D) Magnesium sulphite
   Answer: Option C

417. Pick out the wrong statement.
   (A) Conversion of SO₂ to SO₃ in Monsanto-4 pass converter is about 98%
   (B) The chemical formula of oleum is H₂SO₇, which is formed by saturating sulphuric acid with sulphur trioxide
   (C) Vitriol oil is nothing but technical sulphuric acid
   (D) Decomposition of sulphuric acid on heating does not start before its boiling
   Answer: Option D

418. Which of the following processes is absent in glass manufacturing process?
   (A) Sintering
   (B) Annealing
   (C) Shaping or forming
   (D) Melting
   Answer: Option A

419. Catalytic oxidation of naphthalene produces
   (A) Styrene
   (B) Phenol
   (C) Phthalic anhydride
   (D) None of these
   Answer: Option C

420. 90% of the caprolactam is converted to nylon-6 on its condensation polymerisation in the reactor maintained at __________ °C.
   (A) < 0
   (B) 10-30
   (C) 250-280
   (D) 500-600
   Answer: Option B

421. Oils are partially hydrogenated (not fully) to manufacture Vanaspati, because fully saturated solidified oils
   (A) Cause cholesterol build up and blood clotting
   (B) Are prone to rancid oxidation
   (C) Always contain some amount of nickel (as their complete removal is very difficult)
   (D) Have affinity to retain harmful sulphur compounds
   Answer: Option A

422. Pick out the wrong statement pertaining to the properties of glasses. Glasses generally have
   (A) High electrical insulation properties
   (B) Sharp melting points
   (C) Low co-efficient of thermal expansion
   (D) Compressive strength much greater than their tensile strengths
   Answer: Option B

423. Which of the following is a bleaching agent added in the detergents to facilitate removal of stains caused due to blood, tea etc?
   (A) Sodium silicate
   (B) Sodium borate
   (C) Sodium tripolyphosphate (STPP)
   (D) Caustic soda
   Answer: Option B

424. Fats as compared to oils have
   (A) More unsaturated glycerides of fatty acids
   (B) Less unsaturated glycerides of fatty acids
   (C) Much higher reactivity to oxygen
   (D) Lower melting point
425. Bromine is used in the preparation of
   (A) Fire extinguishing compounds
   (B) Fire proofing agents
   (C) Dyes and antiknock compounds
   (D) All (A), (B) and (C)
   Answer: Option D

426. Vinyl chloride (CH₂=CH.Cl) is produced by the thermal pyrolysis of ethylene dichloride at a pressure & temperature of
   (A) 4 kgf/cm² & 500°C
   (B) 10 kgf/cm² & 1000°C
   (C) 40 kgf/cm² & 200°C
   (D) 100 kgf/cm² & 500°C
   Answer: Option A

427. Addition of calcium oxide to water produces
   (A) Exothermic heat
   (B) Hissing sound
   (C) Slaked lime
   (D) All (A), (B) & (C)
   Answer: Option D

428. Calcareous & argillaceous materials are used in the manufacture of
   (A) Lead
   (B) Cement
   (C) Carbon disulphide
   (D) None of these
   Answer: Option B

429. ________ process is used for the commercial production of nitric acid by the catalytic oxidation of ammonia.
   (A) Solvay
   (B) Ostwald's
   (C) Haber's
   (D) None of these
   Answer: Option B

430. Dichloro diphenyl ________ is the full form of DDT (an insecticide).
   (A) Tetrachloroethane
   (B) Trichloroethane
   (C) Tetrachloromethane
   (D) Trichloromethane
   Answer: Option B

431. Dense soda ash used in the manufacture of glass, is chemically represented by
   (A) Na₂CO₃
   (B) Na₂CO₃.10H₂O
   (C) Na₂CO₃.H₂O
   (D) Na₂HCO₃
   Answer: Option C

432. Isopropyl benzene produced by alkylation of benzene with propylene is known as
   (A) Neoprene
   (B) Cumene
   (C) Gelatin
   (D) Mercaptans
   Answer: Option B

433. Which of the following is a detergent?
   (A) Benzene hexachloride
   (B) Alkyl benzene sulphonate
   (C) Polytetrafluoroethylene
   (D) Cellulose nitrate
434. Pick out the wrong statement.
(A) Fibrillation of fibre during paper manufacture is done to develop the strength in paper
(B) Alkali consumption in digestion/cooking of bamboo is measured in terms of permanganate number
(C) Bagasse fibre contains both lignin & cellulose
(D) Presence of sodium sulphate in pulp makes the pulp bleachability poor
Answer: Option D

435. Coagulant is used ________ filtration.
(A) Before
(B) After
(C) During
(D) To avoid
Answer: Option A

436. Detergent is produced by the sulphonation of dodecyl benzene, which is an ________ reaction.
(A) Endothermic
(B) Exothermic
(C) Irreversible
(D) Both (B) and (C)
Answer: Option D

437. Catalyst used in the manufacture of sulphuric acid by chamber & contact processes are respectively
(A) V₂O₅ & Cr₂O₃
(B) Oxides of nitrogen & Cr₂O₃
(C) V₂O₅ on a porous carrier & oxides of nitrogen
(D) Oxides of nitrogen & V₂O₅ on a porous carrier
Answer: Option D

438. In multistage equilibrium conversion of SO₂ to SO₃ (2SO₂ + O₂ ⇌ 2SO₃), the reverse reaction becomes appreciable at a temperature of 550° C. The percentage equilibrium conversion of SO₂ to SO₃ can be increased by
(A) Increasing the oxygen concentration
(B) Putting more quantity of V₂O₅ catalyst in the converter
(C) Removing some quantity of SO₃ during intermediate stage
(D) Maintaining low temperature & pressure in the converter
Answer: Option C

439. Pick out the wrong statement.
(A) Pasteurisation of milk involves moderate heating followed by cooling
(B) Bakeries and breweries make use of yeasts
(C) Enzyme is a complex nitrogenous compound
(D) Oils and fats are alkaloids
Answer: Option D

440. Fumigant insecticides
(A) Kill insects, when they eat it
(B) Emit poisonous vapour
(C) Are absorbed throughout the plant
(D) None of these
Answer: Option B

441. Calgon used in water treatment is chemically
(A) Sodium phosphate
(B) Sodium hexametaphosphate
(C) Calcium phosphate
(D) Tricresyl phosphate
Answer: Option B

442. Nitrogen is an essential component of
(A) Mineral salts
443. Caprolactam (a raw material for nylon-6 manufacture) is produced from
   (A) Phenol
   (B) Naphthalene
   (C) Benzene
   (D) Pyridine
   Answer: Option C

444. High temperature carbonisation of coal produces
   (A) Inferior coke compared to low temperature carbonisation
   (B) Less of gases compared to liquid products
   (C) Larger quantity of tar compared to low temperature carbonisation
   (D) None of these
   Answer: Option D

445. The type of high refractive index glass used in optical instruments is __________ glass.
   (A) Pyrex
   (B) Flint
   (C) Crookes
   (D) None of these
   Answer: Option B

446. Which of the following is used as a coagulant in water treatment?
   (A) Chloramine
   (B) Chlorine
   (C) Ferrous sulphate
   (D) Hydrogen peroxide
   Answer: Option C

447. Which of the following is a co-product during the manufacture of caustic soda by electrolysis of brine?
   (A) Na₂CO₃
   (B) NaHCO₃
   (C) H₂
   (D) None of these
   Answer: Option C

448. Vegetable oils contain large quantity of glycerides of unsaturated acids. When the vegetable oils contain high amount of saturated fatty acids, it is termed as __________ oil.
   (A) Drying
   (B) Semi-drying
   (C) Non-drying
   (D) None of these
   Answer: Option C

449. Fermentation of molasses to produce ethyl alcohol is done at __________ °C.
   (A) 20 - 30
   (B) < - 5
   (C) 100 - 150
   (D) 250 - 300
   Answer: Option A

450. Nylon-66 is manufactured from
   (A) Hexamethylene diamine and adipic acid
   (B) Hexamethylene diamine and Maleic anhydride
   (C) Caprolactam
   (D) Dimethyl terephthalate and ethylene glycol
   Answer: Option A

451. Anion exchanger is regenerated usually with
   (A) NaOH
452. Sodium chloride content in sea water is about _________ gms/litre.
(A) 2
(B) 10
(C) 25
(D) 50
Answer: Option C

453. Which of the following has sodium bicarbonate as its main constituent?
(A) Baking soda
(B) Baking powder
(C) Washing soda
(D) None of these
Answer: Option B

454. Low purity oxygen is used for
(A) L.D. steel making
(B) Cutting and welding of metals
(C) Medicinal purposes
(D) Chemical oxidation processes
Answer: Option D

455. Lindane is
(A) Not a fumigant
(B) BHC (Benzene Hexachloride) containing 99% γ-isomer
(C) A by-product of BHC manufacture
(D) Both (B) and (C)
Answer: Option B

456. Highly porous refractory bricks are
(A) Less susceptible to chemical attack by molten fluxes and gases etc
(B) Very strong
(C) Having very high thermal conductivity
(D) None of these
Answer: Option D

457. Carboxymethyl cellulose (CMC) is added in detergents to act as a/an
(A) Surfactant
(B) Builder
(C) Optical brightening agent
(D) Anti soil redeposition agent
Answer: Option D

458. The temperature in the calcium carbide furnace is _________ °C.
(A) 200-300
(B) 700-850
(C) 2000-2200
(D) 4000-4500
Answer: Option C

459. Kopper-Totzek coal gasifier
(A) Can give ammonia synthesis gas (H₂ + N₂)
(B) Is a moving bed reactor
(C) Cannot use coking coal
(D) Operate at very high pressure
Answer: Option A

460. Polyvinyl chloride (PVC) is
(A) A thermosetting material
(B) A condensation polymerisation product
(C) Made by employing emulsion polymerisation
461. Most easily and cheaply available fibrous raw material for paper manufacture available in India is bamboo. The yield of pulp produced from fibrous raw material by mechanical process is about ________ percent.
   (A) 75
   (B) < 10
   (C) > 30
   (D) 50
   Answer: Option B

462. The basic difference between vegetable oils and fats is in their
   (A) Density
   (B) Chemical properties
   (C) Physical state
   (D) Composition
   Answer: Option C

463. 'Synthesis gas' meant for the synthesis of organic compound is a variable mixture of
   (A) N_2 & H_2
   (B) CO_2 & H_2
   (C) CO & H_2
   (D) C & H_2
   Answer: Option C

464. Drinking (potable) water treatment does not involve
   (A) Coagulation
   (B) Sedimentation
   (C) Softening
   (D) Disinfection
   Answer: Option C

465. Starting raw material for the manufacture of Maleic anhydride is
   (A) n-butene
   (B) Benzene
   (C) Either (A) or (B)
   (D) Neither (A) nor (B)
   Answer: Option C

466. Removal of dirt/soil by soaps or detergent does not involve the ________ of soil.
   (A) Emulsification
   (B) Dispersion
   (C) Precipitation
   (D) Wetting
   Answer: Option C

467. Thorium is mainly used
   (A) For the manufacture of gas mantles
   (B) As a fissile fuel in a nuclear reactor
   (C) In the manufacture of hydrogen bomb
   (D) In the treatment of cancer
   Answer: Option A

468. Pick out the wrong statement pertaining to nitric acid.
   (A) About 90% of nitric acid is manufactured by Ostwald's process
   (B) It is a strong mono basic acid which reacts with almost all the metals except noble metals
   (C) Yellow color of impure nitric acid is because of dissolved oxides of nitrogen (mainly NO_2)
   (D) Arc process of nitric acid manufacture is economical as compared to Ostwald's process
   Answer: Option D

469. Which oil is preferred for paint manufacture?
   (A) Drying oil
   (B) Non-drying oil
   (C) Semi-drying oil
470. Tall oil obtained as a by-product from the black liquor recovery is
   (A) A black, sticky & viscous liquid
   (B) Used in the manufacture of greases, emulsions & soaps
   (C) Composed mainly of rosin & fatty acids
   (D) All (A), (B) & (C)
   Answer: Option D

471. Which of the following, when pyrolysed, produces Perchloroethylene?
   (A) Ethylene dichloride
   (B) Chlorobenzene
   (C) Carbon tetrachloride
   (D) Chlorinated paraffin
   Answer: Option C

472. Magnesium and calcium __________ cause temporary hardness of water.
   (A) Carbonates
   (B) Bicarbonates
   (C) Phosphates
   (D) Sulphates
   Answer: Option B

473. Pick out the exothermic reaction out of the following:
   (A) C + H₂O = CO + H₂
   (B) CaC₂ + H₂O = Ca(OH)₂ + C₂H₂
   (C) MgCO₃ = MgO + CO₂
   (D) All (A), (B) and (C)
   Answer: Option B

474. Terylene is
   (A) Same as Dacron
   (B) A polyester
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option C

475. __________ paper is used in the manufacture of newsprint paper.
   (A) Ground-wood
   (B) Board
   (C) Tissue
   (D) Wrapping
   Answer: Option A

476. Bakelite is chemically known as
   (A) Polyvinyl chloride (PVC)
   (B) Polybutadiene
   (C) Phenol formaldehyde
   (D) Polyurethane
   Answer: Option C

477. Which of the following is the main constituent of the mother liquor produced in salt industry?
   (A) Quick lime
   (B) Glauber's salt
   (C) Salt petre
   (D) Bromine
   Answer: Option D

478. Unsaturated oils compared to saturated oils have
   (A) Lower melting point & higher reactivity to oxygen
   (B) Higher melting point & higher reactivity to oxygen
   (C) Lower melting point & lower reactivity to oxygen
   (D) Higher melting point & lower reactivity to oxygen
   Answer: Option A
479. Concentration of hydrogen peroxide is done by
(A) Crystallisation
(B) Vacuum crystallisation
(C) Atmospheric distillation
(D) Dehydration
Answer: Option B

480. Production of one ton of dry paper pulp requires about __________ tons of bamboo or wood.
(A) 1
(B) 2.5
(C) 5
(D) 10
Answer: Option B

481. Transparent soaps (e.g. Pears) are
(A) Usually soft soap (made from coconut oil) in which cane sugar & alcohol are added and finally washed with methylated spirit to achieve transparency
(B) Metallic soaps with frothing agent and free Stearic acid to achieve transparency
(C) Metallic soaps with frothing agent from which glycerine has not been recovered
(D) None of these
Answer: Option A

482. Wax is a
(A) Mixture of glycerides
(B) Mixture of esters of polyhydric alcohols excepting glycerine
(C) Liquid at room temperature
(D) Mixture of glycerides of fatty acids
Answer: Option B

483. The biochemical treatment applied to sewage effluents is a process of
(A) Dehydration
(B) Reduction
(C) Oxidation
(D) Polymerisation
Answer: Option C

484. Ordinary glass is not a/an
(A) Amorphous isotropic material
(B) Supercooled liquid
(C) Material with sharp definite melting point
(D) Electrical insulator
Answer: Option C

485. Hydrochloric acid is also known as
(A) Oil of vitriol
(B) Muriatic acid
(C) Strong organic acid
(D) Green acid
Answer: Option B

486. At very high concentration of enzymes, the rate of fermentation chemical reaction is __________ the concentration of reactants.
(A) Independent of
(B) Directly proportional to
(C) Inversely proportional to
(D) Proportional to the square of
Answer: Option A

487. Higher viscosity index of a lubricating oil denotes
(A) Less changes in fluidity of oil with temperature
(B) Substantially high change in fluidity of oil with temperature
(C) Its unsuitability under varying temperature conditions
488. Very dilute solutions are generally used in fermentation reactions for which the optimum temperature range is __________ °C.
   (A) -5 to 0
   (B) 5 to 10
   (C) 30 to 50
   (D) 75 to 80
   Answer: Option C

489. Chloral is used in the manufacture of
   (A) DDT
   (B) BHC
   (C) Parathion
   (D) None of these
   Answer: Option A

490. __________ is used as a flux in the extraction of iron from iron ore (haematite) in blast furnace.
   (A) Bauxite
   (B) Limestone
   (C) Quartz
   (D) Manganese
   Answer: Option B

491. Reverse osmosis is normally used for the
   (A) Separation of isotopes of uranium from gaseous uranium hexafluoride
   (B) Separation of helium from natural gas
   (C) Desalination of brackish water to produce potable (drinking) water
   (D) Purification of oxygen
   Answer: Option C

492. Dry ice (solidified CO\textsubscript{2}) is used for the
   (A) Storage & shipment of frozen foods and ice-creams
   (B) Liquefaction of permanent gases
   (C) Liquefaction of natural gas
   (D) None of these
   Answer: Option A

493. Superior quality laboratory apparatus is made of the __________ glass having low thermal coefficient of expansion & high chemical resistance.
   (A) Flint
   (B) Soda
   (C) Pyrex
   (D) Potash
   Answer: Option C

494. The catalyst used in shift converter is
   (A) Nickel
   (B) Vanadium
   (C) Silica gel
   (D) Alumina
   Answer: Option A

495. CaO is called
   (A) Quick lime
   (B) Slaked lime
   (C) Limestone
   (D) Calcite
   Answer: Option A

496. Use of chlorine in the treatment of sewage
   (A) Helps in grease separation
   (B) Increases the biological oxygen demand (BOD)
497. Exothermic neutralisation reaction between caustic soda and dodecylbenzene sulfonic acid produces sodium dodecylbenzene sulphate, which is a/an
   (A) Explosive
   (B) Soap
   (C) Detergent
   (D) Analgesic drug
   Answer: Option C

498. Viscosity index improver (like polystyrene or polyisobutylene) is added to lubricant to
   (A) Reduce its viscosity
   (B) Increase its viscosity
   (C) Reduce the variation in its viscosity with temperature
   (D) Increase the variation in its viscosity with temperature
   Answer: Option C

499. Styrene butadiene rubber (SBR) is
   (A) A natural rubber
   (B) A synthetic polymer
   (C) A synthetic monomer
   (D) Another name of silicone rubber
   Answer: Option B

500. ________ is a polysaccharide.
   (A) Maltose
   (B) Starch
   (C) Sucrose
   (D) Glucose
   Answer: Option B

501. Chemical name of aspirin (an analgesic drug) is
   (A) Acetylsalicylic acid
   (B) Nicotonic acid
   (C) Calcium acetate
   (D) Methyl salicylate
   Answer: Option A

502. A unit operation is exemplified by the process of
   (A) Reduction
   (B) Desorption
   (C) Nitration
   (D) Combustion
   Answer: Option B

503. Catalytic oxidation-dehydrogenation of methyl alcohol produces
   (A) Formaldehyde
   (B) Phenol
   (C) Acetone
   (D) Maleic anhydride
   Answer: Option A

504. The catalyst used in the manufacture of DDT is
   (A) Alumina
   (B) Silica
   (C) 20% oleum
   (D) Aluminium chloride
   Answer: Option C

505. ________ is produced by the dehydrogenation of ethyl benzene.
   (A) Styrene
   (B) Ethyl alcohol
   (C) Cumene
506. Raw material used in alcohol distilleries in India is
   (A) Molasses
   (B) Benzol
   (C) Methylated spirit
   (D) None of these
   Answer: Option A

507. Good quality of edible salt is obtained from brine by the process of
   (A) Solar evaporation
   (B) Vacuum evaporation
   (C) Freeze drying
   (D) Electrolysis
   Answer: Option B

508. The noble gas which occurs most abundantly in the atmosphere is
   (A) Helium
   (B) Neon
   (C) Krypton
   (D) Argon
   Answer: Option D

509. In primitive days, __________ was being manufactured by Leblanc Process.
   (A) Alum
   (B) Washing soda
   (C) Soda ash
   (D) Calcium carbide
   Answer: Option C

510. Viscose rayon
   (A) Cannot be made from sulphite pulp
   (B) Utilises H₂SO₄, NaOH and CS₂ during its manufacture
   (C) Cannot yield textile grade fibre
   (D) None of these
   Answer: Option B

511. Dehydrogenation of ethyl benzene produces
   (A) Styrene
   (B) Naphthalene
   (C) Phenol
   (D) Benzoic acid
   Answer: Option A

512. Oil is a/an
   (A) Mixture of glycerides
   (B) Mixture of glycerides of fatty acids
   (C) Solid at normal temperature
   (D) Ester of alcohols other than glycerine
   Answer: Option B

513. Main use of hydrazine is
   (A) As a rocket fuel
   (B) In water treatment
   (C) As a disinfectant
   (D) As fire retardant
   Answer: Option A

514. Raw materials for 'Solvay Process' for manufacture of the soda ash are
   (A) Salt, limestone and coke or gas
   (B) Ammonia, salt and limestone
   (C) Ammonia limestone and coke
   (D) None of these
   Answer: Option A
515. The function of gypsum addition during cement making is to
   (A) Increase the density of cement
   (B) Decrease the cement setting rate
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)
   Answer: Option B

516. Sodium bisulphite is used for __________ water.
   (A) Deaeration
   (B) Dechlorination
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option C

517. Catalyst used in the hydrogenation of oil is
   (A) Nickel
   (B) Platinum
   (C) Iron
   (D) Alumina
   Answer: Option A

518. Which of the following is the purest form of water out of the following?
   (A) Underground water
   (B) Rain water
   (C) Well water
   (D) Lake water
   Answer: Option B

519. The catalyst used in the production of elemental sulphur from \( H_2S \) (by oxidation-reduction) is
   (A) Alumina
   (B) Silica gel
   (C) Platinum
   (D) Nickel
   Answer: Option A

520. Chemical name of soda ash is
   (A) Sodium bicarbonate
   (B) Sodium thiosulphate
   (C) Potassium carbonate
   (D) None of these
   Answer: Option D

521. 10% oleum comprises of 10% free
   (A) \( SO_2 \)
   (B) \( H_2SO_3 \)
   (C) \( SO_3 \)
   (D) \( H_2SO_4 \)
   Answer: Option C

522. __________ are added in lacquers to remove film brittleness and to improve adhereness.
   (A) Film forming materials
   (B) Plasticisers
   (C) Diluents
   (D) Solvents
   Answer: Option B

523. A cane sugar factory having sugar production rate of 10 tons/day will produce about __________ tons/day of bagasse (after consumption by the factory for heating etc.).
   (A) 1
   (B) 10
   (C) 25
   (D) 40
   Answer: Option B
524. DDT should not be allowed to come in contact with iron (during its manufacture) to
(A) Avoid its decomposition
(B) Prevent sulphonation of the monochlorobenzene by the acid catalyst
(C) Achieve non-hygroscopic property
(D) None of these
Answer: Option A

525. Alum is commercially produced from
(A) Gypsum
(B) Feldspar
(C) Galena
(D) Bauxite
Answer: Option D

526. Which is the most efficient absorbent for SO$_3$ out of the following?
(A) 20% oleum
(B) 65% oleum
(C) 78% H$_2$SO$_4$
(D) 98% H$_2$SO$_4$
Answer: Option D

527. In nylon-66, the first and second numbers (i.e., 6) respectively designate the number of
carbon atoms present in the
(A) Diamine and the ring
(B) Dibasic acid and the ring
(C) Diamine and the dibasic acid
(D) None of these
Answer: Option C

528. Calcination of gypsum produces
(A) Plaster of Paris
(B) Salt cake
(C) Nitre cake
(D) Lime
Answer: Option A

529. Ethylene oxide is produced by oxidation of ethylene in presence of AgO catalyst at
(A) 1 atm & 100°C
(B) 5 atm & 275°C
(C) 100 atm & 500°C
(D) 50 atm & 1000°C
Answer: Option B

530. Styrene is produced from ethyl benzene by the process of
(A) Dehydrogenation
(B) Oxidation
(C) Alklyation
(D) Dehydration
Answer: Option A

531. The metallic aluminium is obtained from pure alumina in the presence of fused cryolite by
(A) Electrolysis
(B) Electrolytic reduction
(C) Electrolytic oxidation
(D) None of these
Answer: Option B

532. Conversion of SO$_2$ to SO$_3$ in Monsanto 4-pass converter is about _________ percent.
(A) 80
(B) 90
(C) 98
(D) 100
Answer: Option C
533. A 'unit process' is exemplified by the
(A) Distillation
(B) Hydrogenation of oils
(C) Absorption
(D) Humidification
Answer: Option B

534. Pick out the wrong statement.
(A) Eosin requirement in tallow soap is about 40-50% which fastens the lather formation, softens the hard soaps and increases its cleansing action
(B) Soap powder is prepared by mixing soap with hydrated sodium carbonate
(C) Detergents differ from soaps in their action in hard water
(D) Tarnish inhibitor (e.g., Benzotriazole) is added in soap to facilitate the removal of stains due to tea, blood etc
Answer: Option D

535. Sodium carbonate (soda ash) is not used in the manufacture of
(A) Fire extinguishers
(B) Sugar
(C) Baking powder
(D) Detergents
Answer: Option D

536. _________ is the major constituent of the Portland cement.
(A) Calcium carbonate
(B) Calcium oxide
(C) Tricalcium silicate
(D) Calcium sulphate
Answer: Option C

537. Chemical name of 'alum' is
(A) Barium sulphate
(B) Aluminium sulphate
(C) Aluminium chloride
(D) Calcium sulphate
Answer: Option B

538. Polythene is a/an _________ polymerisation product.
(A) Addition
(B) Condensation
(C) Thermosetting
(D) None of these
Answer: Option A

539. The only commercial Fischer-Tropsch plant for producing liquid hydrocarbon fuel from coal is located at
(A) SASOL (in South Africa)
(B) Redcar (U.K.)
(C) Los Angeles (U.S.A.)
(D) Trombay (India)
Answer: Option A

540. Aryl benzene sulphonate (ABS) is a
(A) Detergent
(B) Plasticiser for unsaturated polyester
(C) Starting material for the synthesis of glycerine
(D) Coating ingredient for photographic film
Answer: Option A

541. The ideal pulp for the manufacture of paper should have high _________ content.
(A) Cellulose
(B) Lignin
(C) Both (A) & (B)
(D) None of these
Answer: Option A
542. The major constituents of glass are
   (A) Lime, clay and soda ash
   (B) Sand, lime and soda ash
   (C) Silica, alumina and clay
   (D) Silica, alumina and soda ash
   Answer: Option B

543. Production of alcohol by fermentation of molasses is a/an _________ process.
   (A) Anaerobic
   (B) Aerobic
   (C) Endothermic
   (D) Both (B) and (C)
   Answer: Option B

544. Sulphuric acid solution having a specific gravity of 1.20 at room temperature is used mainly for the
   (A) Fertiliser manufacture
   (B) Car battery solution
   (C) Synthesis of oleum
   (D) Water treatment
   Answer: Option B

545. Which of the following is not a food additive?
   (A) Citric acid
   (B) Invertage
   (C) Benzoyl peroxide
   (D) Ammonium chloride
   Answer: Option D

546. Litharge is
   (A) Lead oxide
   (B) Zinc oxide
   (C) Zinc sulphide
   (D) Cellulosic photographic material
   Answer: Option A

547. During the absorption of HCl gas in water (to produce liquid HCl), the gas is kept above dew point to
   (A) Increase the rate of absorption
   (B) Avoid corrosion
   (C) Reduce the cooling water circulation rate
   (D) None of these
   Answer: Option B

548. Comparing sulphate process with sulphite process, we find that __________ in the later.
   (A) Both temperature & pressure in the former is less than that
   (B) Both temperature & pressure in the former is more than that
   (C) Temperature is more in the former whereas pressure is more
   (D) Pressure is more in the former whereas temperature is less
   Answer: Option B

549. Pick out the correct statement.
   (A) A fat is converted into oil by its hydrogenation
   (B) There is no difference between a fat and an oil so far as its physical properties are concerned
   (C) All vegetable oils except coconut oil, contains fatty acids having more than sixteen carbon atoms
   (D) Vegetable oils are classified as drying, non-drying and semi drying oils depending upon their fatty acids content
   Answer: Option C

550. Acetone is produced by catalytic dehydrogenation of
   (A) Phenol
   (B) Naphthalene
   (C) Isopropanol
551. **Coal tar is used as a**
   (A) Binding material for coal briquettes
   (B) Fuel in rotary kiln
   (C) Binder in making carbon electrodes
   (D) All (A), (B) and (C)
   Answer: Option D

552. **Which form of sulphur is the most stable at room temperature?**
   (A) Plastic
   (B) Monoclinic
   (C) Rhombic
   (D) Flowers of sulphur
   Answer: Option C

553. **With increase in temperature, the equilibrium constant at constant pressure (Kp) for oxidation of sulphur dioxide**
   (A) Increases
   (B) Increases linearly
   (C) Decreases
   (D) Decreases linearly
   Answer: Option C

554. **Glycerine is not used in the**
   (A) Manufacture of explosive
   (B) Conditioning and humidification of tobacco
   (C) Manufacture of pharmaceuticals
   (D) None of these
   Answer: Option D

555. **Dacron is a/an**
   (A) Polyester
   (B) Unsaturated polyester
   (C) Polyamide
   (D) Inorganic polymer
   Answer: Option A

556. **High acid value of an oil or fat is an indication of**
   (A) Storage under improper conditions
   (B) Absence of unsaturation
   (C) Its smaller molecular weight
   (D) None of these
   Answer: Option A

557. **Trinitrotoluene (TNT), an explosive, is made by the nitration of**
   (A) Nitrobenzene
   (B) Toluene
   (C) Nitrotoluene
   (D) Benzene
   Answer: Option B

558. **Brackish water which contains mostly dissolved salt, can be purified by the __________ process.**
   (A) Reverse osmosis
   (B) Sand filter
   (C) Lime soda
   (D) Permutit
   Answer: Option A

559. **__________ is used as a catalyst in fat splitting.**
   (A) ZnO
   (B) Ni
   (C) V₂O₅
560. ________ is produced using molasses as the starting raw material.
   (A) Methyl alcohol
   (B) Ethyl alcohol
   (C) Benzol
   (D) Dimethyl ether
   Answer: Option B

561. In the production of soda ash by Solvay process, the by-product is
   (A) CaCl₂
   (B) NH₄Cl
   (C) NH₃
   (D) NaOH
   Answer: Option A

562. How much temperature is maintained during quicklime manufacture in the calcination zone of the vertical shaft kiln?
   (A) 500°C
   (B) 750°C
   (C) 1000°C
   (D) 1500°C
   Answer: Option C

563. Sodium salt of higher molecular weight fatty acid is termed as the ________ soap.
   (A) Hard
   (B) Soft
   (C) Metallic
   (D) Lubricating
   Answer: Option B

564. Vulcanisation of rubber
   (A) Decreases its tensile strength
   (B) Increases its ozone & oxygen reactivity
   (C) Increases its oil & solvent resistance
   (D) Converts its plasticity into elasticity
   Answer: Option D

565. Which of the following additives/water proofing agents is added to lower the hydrophilic (moisture loving) characteristic of cement?
   (A) Xanthates
   (B) Stearic acid
   (C) Calcium & aluminium stearate
   (D) Formic acid
   Answer: Option C

566. Hydrazine is largely used
   (A) As a starting material for 'hypo'
   (B) In photographic industry
   (C) As rocket fuel
   (D) In printing industry
   Answer: Option C

567. The product obtained on mixing calcium oxide with water is called
   (A) Quicklime
   (B) Slaked lime
   (C) Milk of lime
   (D) None of these
   Answer: Option B

568. Pick out the wrong statement pertaining to solvent extraction of oil. Rate of extraction
   (A) Decreases with decrease of thickness of the flakes
   (B) Increases with the increasing flake size keeping the flake thickness constant
   (C) Increases considerably with the rise of temperature
   Answer: Option C
(D) Decreases as the moisture content of flakes increases
Answer: Option D

569. Zeolite used in water softening process (cation exchange) is regenerated by washing with
(A) Brine
(B) Chloramines
(C) Sodium bisulphite
(D) Liquid chlorines
Answer: Option A

570. Bromine content in sea water may be around _________ ppm.
(A) 70
(B) 640
(C) 1875
(D) 2500
Answer: Option A

571. The purpose of adding Na₂CO₃ to water of low alkalinity is to
(A) Permit the use of alum as a coagulant
(B) Increase the softening capacity of zeolite
(C) Facilitate easy regeneration of zeolite
(D) All (A), (B) and (C)
Answer: Option A

572. Margarine is a/an
(A) Fat
(B) Explosive
(C) Plasticiser
(D) Rocket propellant
Answer: Option A

573. Main constituents of Portland cement are calcium aluminate and
(A) Gypsum
(B) Silicates
(C) Sodium silicate
(D) Carbonates
Answer: Option B

574. Cumene is the starting material for the production of
(A) Benzoic acid
(B) Phenol and acetone
(C) Isoprene
(D) Styrene
Answer: Option B

575. Glauber’s salt is chemically represented by
(A) Na₂SO₄·10H₂O
(B) CaCl(OCl)
(C) CaSO₄·H₂O
(D) (NH₄)₂SO₄
Answer: Option A

576. Liquefaction of gases cannot be done by
(A) Exchange of heat with colder stream
(B) Adiabatic expansion through a throttle valve (Joule-Thomson expansion)
(C) Merely compressing it beyond critical pressure
(D) Adiabatic expansion against a piston or in a turbine
Answer: Option C

577. Which of the following is used as a binding material in soap to improve soap texture?
(A) Rosin
(B) Borax
(C) Benzyl acetate
(D) Sodium carbonate
Answer: Option B
578. Alcohol percentage in molasses may be around
   (A) 10
   (B) 40
   (C) 70
   (D) 85
   Answer: Option B

579. Heating of __________ to 120°C, produces plaster of paris.
   (A) Blue vitriol
   (B) Gypsum
   (C) Calcium silicate
   (D) Calcium sulphate
   Answer: Option B

580. Adipic acid is an intermediate in the manufacture of
   (A) Perspex
   (B) Nylon-66
   (C) Polystyrene
   (D) Bakelite
   Answer: Option B

581. During the manufacture of sulphuric acid, the temperature of molten sulphur is not
   increased beyond 160°C, as
   (A) It is very corrosive at elevated temperature
   (B) Its viscosity is not reduced on further heating (hence pressure drop on pumping it, cannot be
       further reduced)
   (C) It decomposes on further increasing the temperature
   (D) None of these
   Answer: Option B

582. Average sulphur content in Indian pyrites is about __________ percent.
   (A) 15
   (B) 35
   (C) 55
   (D) 70
   Answer: Option B

583. In industrial nomenclature, alcohol means
   (A) Butyl alcohol
   (B) Propyl alcohol
   (C) Ethanol
   (D) Methyl alcohol
   Answer: Option C

584. The process used for the manufacture of ethyl alcohol from molasses is
   (A) Distillation
   (B) Dehydration
   (C) Dehydrogenation
   (D) None of these
   Answer: Option D

585. Gun powder uses
   (A) Sulphur
   (B) Charcoal
   (C) Potassium nitrate
   (D) All (A), (B), & (C)
   Answer: Option D

586. Presence of sodium tripolyphosphate (an additive) in synthetic detergent
   (A) Facilitates its use even in hard water (by sequestering the water-hardening Ca & Mg ions)
   (B) Inhibits its corrosive effects
   (C) Does not allow redeposition of dirt on the cleaned surface
   (D) None of these
   Answer: Option A
587. Triple superphosphate is manufactured by reacting
   (A) Phosphate rock with phosphoric acid
   (B) Phosphate rock with sulphuric acid
   (C) Phosphate rock with nitric acid
   (D) Ammonium phosphate with phosphoric acid
   Answer: Option A

588. Ultimate analysis of coal determines its __________ content.
   (A) Carbon, hydrogen, nitrogen & sulphur
   (B) Carbon, ash, sulphur & nitrogen
   (C) Carbon, sulphur, volatile matter & ash
   (D) Carbon, volatile matter, ash & moisture
   Answer: Option C

589. Phenol formaldehyde resin is used as an adhesive in making
   (A) Laminates
   (B) Card boxes
   (C) Furniture
   (D) Books
   Answer: Option A

590. Poly Tetrafluoroethylene (P.T.F.E.) is known as
   (A) Bakelite
   (B) Teflon
   (C) Celluloid
   (D) Dacron
   Answer: Option B

591. Percentage of uranium in Carnotite ore found in Jadugoda (Jharkhand) is about
   (A) 0.1 to 0.5
   (B) 1 to 5
   (C) 5 to 10
   (D) 15 to 25
   Answer: Option A

592. Systemic insecticides
   (A) Are absorbed throughout the plant
   (B) Kill insects following external bodily contact
   (C) Are stomach poisons
   (D) Emit poisonous vapour
   Answer: Option A

593. Phthalic anhydride is produced by the oxidation of
   (A) Naphthalene
   (B) Benzene
   (C) Toluene
   (D) Aniline
   Answer: Option B

594. Most commonly used rubber vulcanising agent is
   (A) Sulphur
   (B) Bromine
   (C) Platinum
   (D) Alumina
   Answer: Option A

595. Chemical name of Grignard reagent is
   (A) Sodium thiosulphate
   (B) Ethyl magnesium chloride
   (C) Sodium sulphite
   (D) Sodium bicarbonate
   Answer: Option B
(A) Penicillin  
(B) Antibiotics  
(C) Wine  
(D) Pasteurised milk  
Answer: Option C

597. Pick out the wrong statement.  
(A) DDT is manufactured by the condensation of chlorobenzene with chloral at 30°C in presence of oleum, which is a highly exothermic reaction  
(B) Chloral is obtained by the chlorination of ethyl alcohol  
(C) Insecticides acting on the insects through the respiratory system are called fumigants  
(D) Benzene hexachloride is not a contact insecticide  
Answer: Option D

598. Carbon content of pitch (residue of coal tar distillation) is around __________ percent.  
(A) 70  
(B) 55  
(C) 80  
(D) 94  
Answer: Option D

599. Lurgi coal gasifier is a pressurised _________ bed reactor.  
(A) Moving  
(B) Fixed  
(C) Fluidised  
(D) Entrained  
Answer: Option A

600. Soaps remove dirt by  
(A) Increasing the surface tension  
(B) Decreasing wettability  
(C) Supplying hydrophilic group  
(D) None of these  
Answer: Option D

601. Riboflavin is a/an  
(A) Vitamin  
(B) Analgesic drug  
(C) Anaesthetics  
(D) Anti-malarial drug  
Answer: Option A

602. Coke oven gas consists mainly of  
(A) H₂ & CH₄  
(B) CO & CO₂  
(C) H₂ & CO  
(D) CH₄ & CO  
Answer: Option A

603. Sea weeds are an important source of  
(A) Fluorine  
(B) Chlorine  
(C) Bromine  
(D) Iodine  
Answer: Option D

604. A good quality coal should have  
(A) Low fusion point of ash  
(B) High ash content  
(C) High sulphur content  
(D) None of these  
Answer: Option D

605. Bakelite is  
(A) Same as Polytetrafluoroethylene (PTFE)
(B) An inorganic polymer
(C) Same as thermosetting phenol-formaldehyde
(D) Not a polymer
Answer: Option C

606. Potassium is kept & transported under
(A) Water
(B) Liquid ammonia
(C) Kerosene oil
(D) Alcohol
Answer: Option C

607. Oils and fats are converted to soap in a process called
(A) Hydrogenation
(B) Esterification
(C) Saponification
(D) None of these
Answer: Option C

608. Pick out the wrong statement.
(A) High early strength cement are made from materials having high silica to lime ratio
(B) The function of gypsum in cement is to enhance its initial setting rate
(C) Acid resistant cements are known as silicate cement
(D) Major component of greyish Portland cement is tricalcium silicate
Answer: Option A

609. Free alkali in a toilet soap is _________ that in a laundry shop.
(A) Less than
(B) More than
(C) Same
(D) None of these
Answer: Option A

610. A substance produced by a living organism and capable of anti-microbial activity is called a/an
(A) Antibiotic
(B) Antiseptic
(C) Disinfectant
(D) None of these
Answer: Option A

611. Solvay process is not used for the manufacture of potassium carbonate, because of the reason that potassium bicarbonate
(A) Is prone to thermal decomposition
(B) Has high water solubility and is unstable
(C) Is soluble in ammonium chloride and potassium chloride solution
(D) All (A), (B) and (C)
Answer: Option C

612. Washing soda is chemically represented by
(A) Na₂CO₃
(B) Na₂CO₃. H₂O
(C) Na₂CO₃.10H₂O
(D) NaHCO₃
Answer: Option C

613. Which of the following is a disaccharide?
(A) Sucrose
(B) Glucose
(C) Starch
(D) Maltose
Answer: Option A

614. Absorption of SO₃ in 97% H₂SO₄ is
(A) Exothermic
615. Out of the following processes of paper pulp manufacture, the maximum corrosion problem in digestion & handling equipments is encountered in the ________ process.
   (A) Mechanical
   (B) Sulphate/Kraft
   (C) Sulphite
   (D) Neutral sulphite semi-chemical
   Answer: Option D

616. Phthalic anhydride is made by the
   (A) Oxidation of naphthalene
   (B) Oxidation of benzene
   (C) Dehydrogenation of ethyl benzene
   (D) None of these
   Answer: Option A

617. Oxygen is produced by fractionation of air using ________ process.
   (A) Linde's
   (B) Claude's
   (C) Either (A) or (B)
   (D) None of these
   Answer: Option C

618. Use of water having dissolved oxygen in boilers promotes
   (A) Corrosion
   (B) Sequestration
   (C) Scale formation
   (D) None of these
   Answer: Option A

619. Dehydrogenation of Isopropanol produces
   (A) Propyl alcohol
   (B) Acetone
   (C) Trichloroethylene
   (D) Formaldehyde
   Answer: Option B

620. Hydrogenation of vegetable oils is a/an ________ reaction.
   (A) Endothermic
   (B) Autocatalytic
   (C) Exothermic
   (D) Homogenous
   Answer: Option C

621. Which of the following is a constituent of vinegar?
   (A) Around 10% alcohol
   (B) Around 1% acetic acid
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)
   Answer: Option C

622. Cement setting under water employs a/an ________ process.
   (A) Hydration
   (B) Decomposition
   (C) Oxidation
   (D) Reduction
   Answer: Option A

623. 'Hollander beater' machine used in the paper manufacturing plant does not accomplish the task of
   (A) Final rolling out of paper
624. Paper grade bamboo contains about ________ percent cellulose.
   (A) 5
   (B) 20
   (C) 40
   (D) 60
   Answer: Option A

625. Deaeration of water in its treatment is necessary, as it
   (A) Minimises its turbidity
   (B) Helps in controlling its taste and odour
   (C) Minimises its corrosiveness
   (D) None of these
   Answer: Option C

626. Oil produced by solvent extraction
   (A) Has low free fatty acid content
   (B) Is odourless
   (C) Both (A) & (B)
   (D) Neither (A) nor (B)
   Answer: Option D

627. The major constituent of black liquor generated during paper manufacture is sodium
   (A) Sulphate
   (B) Carbonate
   (C) Hydroxide
   (D) Bi-carbonate
   Answer: Option B

628. Synthetic glycerine is produced from
   (A) Toluene
   (B) Phenol
   (C) Propylene
   (D) Naphthalene
   Answer: Option C

629. Most widely and commonly used coagulant for the removal of suspended impurities in water is
   (A) Bleaching powder
   (B) Slaked lime
   (C) Alum
   (D) Copper sulphate
   Answer: Option C

630. Permanent hardness of water is due to the presence of calcium & magnesium
   (A) Bi-carbonates
   (B) Sulphates & chlorides
   (C) Carbonate
   (D) None of these
   Answer: Option B

631. Flash point of most vegetable oils is about ________ °C.
   (A) 50
   (B) 100
   (C) 200
   (D) 300
   Answer: Option C

632. Glycerine can be obtained from
   (A) Fat
   (B) Naphthalene
633. Common salt is generally not produced commonly by _________ method from brine.
   (A) Freeze drying
   (B) Electrolytic
   (C) Solar evaporation
   (D) Vacuum evaporation
   Answer: Option A

634. Which of the following is not produced on commercial scale from sea water?
   (A) Bromine
   (B) Magnesium compounds
   (C) Potassium compounds
   (D) Sodium sulphate
   Answer: Option D

635. Dacron (or Terylene) fibres as compared to nylon fibres have
   (A) Better heat & acid resistant properties
   (B) Poorer resistance to alkalis
   (C) Poorer dyeability
   (D) All (A), (B) and (C)
   Answer: Option D

636. Parathion and Malathion are
   (A) Pesticides
   (B) Plasticisers for unsaturated polyesters
   (C) Pain-relieving drugs (analgesic)
   (D) Tranquilisers
   Answer: Option A

637. Which of the following is a constituent of coffee?
   (A) Caffeine
   (B) Nicotine
   (C) Calgon
   (D) Lignin
   Answer: Option A

638. Raw materials required for the manufacture of _________ is acetylene and hydrochloric acid.
   (A) Phthalic anhydride
   (B) Vinyl chloride
   (C) Maleic anhydride
   (D) Dacron
   Answer: Option B

639. Sudden temperature fluctuation does not affect pyrex glass, because of its
   (A) Low co-efficient of expansion
   (B) High co-efficient of expansion
   (C) High melting point
   (D) Both (B) and (C)
   Answer: Option A

640. Grignard reagent is chemically known as
   (A) Ethyl magnesium chloride
   (B) Methyl magnesium chloride
   (C) Dichlorophenol
   (D) Monochloroacetic acid
   Answer: Option A

641. Reaction of ethylene glycol and dimethyl terephthalate (DMT) produces
   (A) Nylon-6
   (B) Dacron
   (C) Polyester
642. Use of hydrated lime in water treatment
(A) Before filtration, reduces the bacterial load on filters
(B) After filtration, combats the corrosiveness of water due to the presence of O₂ & CO₂
(C) Is to adjust the pH value
(D) All (A), (B) and (C)
Answer: Option D

643. Sucrose content in cane sugar may be around __________ percent.
(A) 50
(B) 70
(C) 95
(D) 80
Answer: Option C

644. Plaster of Paris is
(A) CaSO₄·½H₂O
(B) Used for setting of broken bones
(C) Both (A) and (B)
(D) Same as gypsum
Answer: Option C

645. Commercial scale production of hydrogen from iron-steam reaction represented by,
3Fe + 3H₂O = Fe₃O₄ + 4H₂, is not practised, as it is
(A) A slow reaction
(B) A discontinuous reaction (requiring regeneration of iron by water gas intermittently)
(C) Still in development stage (by employing fluidised bed technique)
(D) All (A), (B) and (C)
Answer: Option D

646. Blue vitriol is chemically
(A) Copper sulphate
(B) Ferrous sulphate
(C) Copper nitrate
(D) Aluminium sulphate
Answer: Option A

647. Which of the following is a detergent?
(A) Fatty alcohol
(B) Alkyl benzene sulphonate (ABS)
(C) Fatty acids
(D) Methylene chloride
Answer: Option B

648. Silicon carbide is a/an
(A) Adhesive
(B) Abrasive
(C) Type of glass
(D) Brittle material
Answer: Option B

649. Electro deposition of metals i.e. electroplating is never done on
(A) Metals
(B) Alloys
(C) Refractories
(D) Non-metals
Answer: Option C

650. Le-Blanc process is a primitive process for the manufacture of
(A) Caustic soda
(B) Soda ash
(C) Bromine from sea water
(D) Hydrochloric acid
651. Gypsum is chemically
   (A) Calcium chloride
   (B) Potassium sulphate
   (C) Sodium sulphate
   (D) Calcium sulphate
   Answer: Option D

652. A bio-catalyst produced by living cells which acts independent of the cell is called a/an
   (A) Substrate
   (B) Enzyme
   (C) Nutrient
   (D) None of these
   Answer: Option B

653. Sulphuric acid is mainly used in the _________ industry.
   (A) Fertiliser
   (B) Steel
   (C) Paper
   (D) Paint
   Answer: Option A

654. Trinitro-toluene (TNT) is
   (A) Used in glycerine manufacture
   (B) An explosive
   (C) Used in dye manufacture
   (D) None of these
   Answer: Option B

655. Hollander beater used during paper pulp manufacture does not facilitate the _________ of fibre.
   (A) Cutting
   (B) Fibrillation
   (C) Hydration
   (D) Strengthening
   Answer: Option D

656. Which of the following is used as a coagulant in treating turbid water?
   (A) Chlorine
   (B) Ferric sulphate
   (C) Calcium sulphate
   (D) Activated carbon
   Answer: Option B

657. Massecuite is
   (A) Used for paper making
   (B) Used as a cattle feed
   (C) Highly acidic in nature
   (D) None of these
   Answer: Option D

658. Electric bulbs are made of _________ glass.
   (A) Jena
   (B) Flint
   (C) Crookes
   (D) Pyrex
   Answer: Option B

659. An alkali metal salt of Palmitic acid is known as
   (A) Soap
   (B) Metallic soap
   (C) Detergent
   (D) Alkaloid
   Answer: Option B