

PROCESS TECHNOLOGY-ORGANIC-III

101. The oxime of cyclohexanone undergoes Backmann rearrangement to produce –
(a) phenol, (b) nitrophenol,
(c) caprolactam, (d) phthalimide,
102. Which of the following compounds are raw materials for production of nylon 66 ?
(a) benzoic acid and p-toluene sulfonic acid,
(c) hexamethylene diamine and adipic acid,
(a) terephthalic acid
103. Nylon 6 was first produced in Germany in –
(a) 1925, (b) 1940, (c) 1950, (d) 1959,
104. Nylon 6 is produced by polymerizing caprolactam in presence of catalytic amount of –
(a) ammonia, (b) hydrocyanic acid,
(c) water, (d) hydrofluoric acid,
105. The properties of Nylon 6 are –
(a) very similar to those of Nylon 66,
(b) somewhat similar to those of Nylon 66,
(c) very different from those of Nylon 66,
106. The cumene process for manufacture of phenol was introduced in the early –
(a) 1920s, (b) 1930s, (c) 1940s, (d) 1950s,
107. In the cumene process for phenol manufacture, cumene hydroperoxide is decomposed to produce phenol and –
(a) methanol (b) acetone,
(c) isopropanol, (d) methylethyl ketone,
108. Bakelite, introduced by Bakeland in 1910, is basically –
(a) polycarbonates, (b) phenol-formaldehyde resins,
(c) polyethylene, (d) poly vinyl chloride,
109. Which of the following is a thermosetting polymer ?
(a) polyethylene, (b) polystyrene,
(c) polyvinyl chloride, (d) phenolic resin,
110. Acetone, on reaction with a large excess of phenol in presence of an acidic catalyst such as hydrogen chloride, produce –
(a) p-isopropyl phenol, (b) 2, 4-diisopropyl phenol,
(c) Bisphenol A, (d) none of the above,
111. Polycarbonate plastics are produced by reacting Bisphenol A with –

- (a) hydrochloric acid, (b) carbonyl chloride,
(c) carbonyl sulfide, (d) carbon disulfide,
(e) none of the foregoing,

112. Nitrobenzene is produced by reacting benzene with a nitrating mixture consisting of

—

- (a) HF and HNO₃, (b) H₂SO₄ and NaNO₃,
(c) HNO₃ and H₂SO₄, (d) HNO₃ and HCl,

113. The method of manufacture of aniline is by reduction of nitrobenzene. Both liquid and vapor phase processes are used for bringing about reduction. Aniline has a wide variety of uses ; they are mostly —

- (a) large scale, (b) small scale,

114. 4, 4' – diamino diphenyl methane is produced on large scale using aniline as a raw material. The diaminodiphenol methane is subsequently converted to 4, 4'-diphenyl methane de-isocyanate (MDI). MDI is used for making —

- (a) rigid polyurethane foams and other polyurethane products,
(b) life – saving drugs, (c) surface coatings,
(d) none of the foregoing,

115. Maleic anhydride can be produced by air oxidation of —

- (a) benzene, (b) n-butane,
(c) n-butenes, (d) all of the foregoing,

116. Oxidation of benzene to produce maleic anhydride is carried out with a large excess of air so that the benzene vapor – air mixture is outside the —

- (a) upper explosive limit, (b) lower explosive limit,

117. Catalyst employed for vapor phase oxidation of benzene to maleic anhydride is —

- (a) vanadium pentoxide/molybdenum oxide, (b) silica – alumina,
(c) platinum on r – alumina, (d) palladium on carbon,

118. Major use of maleic anhydride is in making unsaturated polyester resins. Now unsaturated polyester resins are produced by reacting a mixture of maleic anhydride and phthalic anhydride with --

- (a) 2-ethyl hexanol, (b) propylene tetramer,
(c) propylene oxide, (d) propylene glycol,

119. Unsaturated polyester resins mentioned in question (118) are used —

- (a) in the manufacture of glass fibre reinforced plastics and surface coatings
(b) in the manufacture of “ Bakelite “,
(c) in synthetic detergents,

120. The most important of the surface – active agents used for domestic purpose are sodium alkyl benzene sulfonates. In order to achieve optimum detergent properties the number of carbon atoms in the alkyl group should be –

- (a) four, (b) eight,
(c) twelve, (d) sixteen,

121. Detergent alkylate made by reacting benzene with propylene tetramer, when sulfonated and subsequently neutralized, gives a detergent which is –

- (a) biologically hard, (b) easily biodegradable,

122. Consider manufacture of linear alkyl benzene sulfonates (LABS). The alkylbenzenes are sulfonated with –

- (a) 50 % sulphuric acid, (b) 98 % sulphuric acid,
(c) 20 % oleum, (d) sulfur trioxide gas,

123. Which of the following compounds is made on a fairly large scale starting from toluene as a raw material ?

- (a) Benzoic acid, (b) p-Nitrotoluene,
(c) Phenol, (d) Toluene di-isocyanate,

124. Toluene di-isocyanate is used in making –

- (a) dyestuffs, (b) pharmaceutical products,
(c) flexible polyurethane foams, (d) all of the foregoing,

125. Polyurethanes, notably flexible polyurethane foams, have a wide range of uses in –

- (a) car upholstery, (b) furniture, bedding, etc.
(c) carpets and textiles, (d) all of the foregoing,

126. Polyurethanes are made by reacting toluene di-isocyanate with –

- (a) maleic anhydride, (b) cumene hydroperoxide,
(c) caprolactam, (d) polyether polyols made from propylene oxide,

127. Phthalic anhydride is produced by air oxidation of naphthalene or ortho-xylene. The product is recovered by –

- (a) fractional distillation,
(b) passing the reactor effluents into a “switch condenser”
(c) solvent extraction, (d) reactive distillation,

128. One of the most important uses of phthalic anhydride is manufacture of dialkyl phthalates. Dialkylphthalates are used as –

- (a) antioxidants, (c) reinforcing fillers in
tyres, (b) plasticizers, (d) chain terminating agents in polymer
production,

129. Which of the following polymers consumes most dialkylphthalates ?

- (a) Poly (vinyl chloride) (b) poly styrene,

(c) polypropylene,

(d) polycarbonates,

130. Phthalate plasticizers are made by reacting phthalic anhydride with a variety of alcohols containing up to 13 carbon atoms. The most important are those made from –

(a) C₄ alcohols,

(b) C₅ alcohols,

(c) C₈ alcohols,

(d) C₁₁ alcohols,

131. Alkyled resins are low molecular weight polyesters,

(a) made by reacting phthalic anhydride with glycerol, vegetable oils and/or fatty acids, and various other components –

(b) having complex, ill-defined structures,

(c) mainly used in surface coatings,

(d) all of the foregoing,

132. Poly (ethylene terephthalate) were first manufactured commercially around –

(a) 1920,

(b) 1940,

(c) 1950,

(d) 1960,

133. Raw material for the production of terephthalic acid is p-xylene, when p-xylene is oxidized in air under conventional liquid phase oxidation conditions, which of the following is formed predominantly ?

(a) terephthalic acid,

(b) para-toluic acid,

(c) benzoic acid,

(d) para-carboxybenzaldehyde,

134. In the Amoco process for terephthalic acid manufacture, p-xylene is oxidized by air in the liquid phase in solution in acetic acid at about 200°C and under 20 atm pressure with a catalyst system containing –

(a) cobalt, manganese and bromide ions in solution,

(b) copper, silver and iodide ions in solution,

(c) silver, platinum and nitrate ions in solution,

(d) none of the foregoing,

135. In the Amoco process terephthalic acid is formed in –

(a) 50 to 60% yield; almost complete conversion of p-xylene occurs,

(b) 70 to 80% yield; 50% conversion of p-xylene occurs,

(c) 90 to 95% yield; almost complete conversion of p-xylene occurs,

(d) 100% yield; 100% conversion of p-xylene occurs.

136. The reaction mixture in the Amoco process for terephthalic acid manufacture is extremely corrosive; therefore,

(a) stainless steel 321 reactors have to be used,

(b) titanium – lined reactors have to be used,

(c) rubber – lined reactors have to be used,

(d) glass – lined reactors have to be used,

137. The original method of manufacture of poly (ethylene terephthalate) was based on –

(a) terephthalic acid,

(b) methyl ester of p-toluic acid,

(c) p – toluic acid, (d) dimethyl terephthalate,

138. Which of the following is the oldest commercial man-made fibre ?

(a) Nylon, (b) Terylene,
(c) cotton, (d) viscose rayon,

139. In the viscose rayon process, the principal raw materials for the production of viscose are

(a) sodium hydroxide, zinc sulfate and sodium sulfate,
(b) cellulose, sodium hydroxide and carbon disulfide,
(c) cellulose, sodium hydroxide and sulfuric acid,
(d) carbon dioxide, hydrogen sulfide and sodium hydroxide,

140. That cellulose could be converted to alkali cellulose which on treatment with carbon disulfide formed a xanthate that dissolved in caustic soda solution to produce viscose was discovered by –

(a) Pauling and Associates, 1955, (b) Cotton and Wilkinson, 1970,
(c) Cross and Vevan, 1892, (d) none of the foregoing,

141. Which of the following industries was the first to start the manufacture of rayon yarn in our country ?

(a) National Rayon Corporation, (b) Travancore Rayon,
(c) Kesoram Rayon, (d) none of the foregoing,

142. How many units are there at present in India that produce Rayon yarn ?

(a) 4, (b) 7, (c) 9, (d) 12,

143. Which of the following compounds acts as a polymerization inhibitor for butadiene and styrene ?

(a) chlorobenzene, (b) m – iodophenol,
(c) 4-tert – butylcatechol, (d) 2, 4, 6-trinitroresorcinol,

144. Ethyl alcohol has been produced by the fermentation process for many thousands of years, but economic industrial manufacture of synthetic ethyl alcohol began in –

(a) 1790s, (b) 1830s, (c) 1880s, (d) 1930s,

145. Synthetic ethyl alcohol was first produced by –

(a) direct hydration of ethylene, (b) indirect catalytic hydration of ethylene,
(c) carbonylation of methyl alcohol and methyl acetate,
(d) none of the foregoing,

146. Other than India, which other country has large volumes of fermentation alcohols ?

(a) Pakistan, (b) China,
(c) Brazil, (d) U.S.A.

147. Approximately what percent of world ethanol capacity is synthetic ?

- (a) 50 %, (b) 5 %, (c) 85 %, (d) 20 %,

148. Raw materials for production of ethanol by direct hydration route are ethylene (of polymerization grade) and demineralized water. The ratio of ethylene to water in the feed is –

- (a) 10-12 : 1, (b) 1 : 100,
(c) 1 : 0.3 – 0.8, (d) none of the foregoing,

149. Catalyst employed in fixed-bed reactor for ethanol production by direct hydration route is

- (a) 77% H_3PO_4 absorbed on a carrier like silica gel or a diatomaceous earth fused with aluminum oxide,
(b) Cation exchange resin in H^+ - form like Amberlyst 15,
(c) Silver gauze,
(d) Pt – Rh Catalyst,

150. In the direct hydration process for ethanol production, conversion per pass in the reactor is –

- (a) 89 – 90 %, (b) 75 – 77 %, 
(c) 37 – 38 %, (d) 4 - 5 %,

101c, 102b, 103b, 104d, 105a, 106d, 107b, 108b, 109d, 110c, 111b,
112c, 113b, 114a, 115d, 116b, 117a, 118d, 119a, 120c, 121a, 122c,
123d, 124c, 125d, 126c, 127b, 128b, 129a, 130c, 131d, 132c, 133b,
134a, 135c, 136b, 137a, 138d, 139b, 140c, 141b, 142d, 143c, 144d,
145b, 146c, 147d, 148c, 149a, 150d

❖ For Further details, corrections and information. You may contact at:

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