LEADER & ACHIEVER COURSE

PHASE : MLI,J,K,M,N,O,R,S,MAZG,H,I,J,K,L,M,T,U,M4AA2A,M2AP1A,M2AP1B
TARGET : PRE-MEDICAL 2020

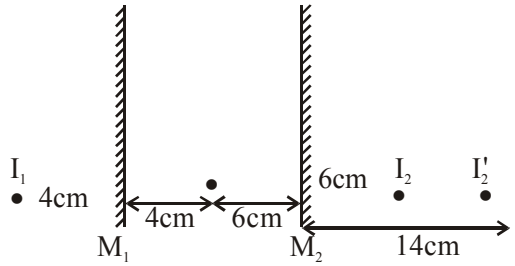
Test Type : **MAJOR** Test Pattern : NEET(UG)

TEST DATE : 11 - 03 - 2020

TEST SYLLABUS : 06

HINT – SHEET

1.



Distance between I_1 & I_2' is 28cm

2. Distance between to minimize chromatic abberration $= \frac{f_1+f_2}{2} = \frac{8+4}{2} = 6\text{ cm}$

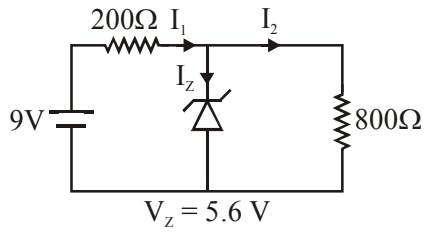
3. Intensity becomes 4 times because area is reduced to $\left(\frac{1}{4}\right)^{th}$.

4. By using $E = -\frac{13.6}{n^2}\text{eV}$ (for H_2 atom)

$\Rightarrow 0.544 = -\frac{13.6}{n^2} \Rightarrow n^2 = 25 \Rightarrow n = 5$

$\therefore$ Angular momentum $= n\frac{h}{2\pi} = \frac{5h}{2\pi}$.

5.



In first loop

$9V = 200\ I_1 + 5.6\ V$

$I_1 = \frac{3.4}{200} = 17\text{ mA}$

In second loop

$I_2 = \frac{5.6}{800} = 7\text{ mA}$

$I_Z = I_1 - I_2$

$= (17 - 7)\text{ mA} = 10\text{ mA}$

6. Rotation in Reflected ray

$10° + 40° = 30°$

7. $m = m_0 \times m_e$

$= 25 \times 6$

$= 150$

8. $d = \frac{1.22\lambda}{2(NA)}$

$\Rightarrow NA = 0.5$

9. The characteristic X-ray depends on the material used.

10. Voltage on R is 3V

$V = IR \Rightarrow 3 = \frac{100}{1000} \times R \Rightarrow R = 30\Omega$

11. $\sin\theta_C = \frac{\mu_R}{\mu_D} = \frac{v_D}{v_R}$

$\frac{6}{10} = \frac{v_D}{3\times10^8}$

$v_D = 1.8 \times 10^8$ m/s

13. $\frac{3}{8}I_0 = I = \frac{I_0}{2}\cos^2\theta$

14. outside the nucleus, neutron is unsatble.

16. $v = \frac{uf}{u-f} = -60$ cm

$\frac{h_i}{5} = -\frac{v}{u} \Rightarrow h_i = -25\text{cm}$

19. $\sigma = [(Zm_p + NM_n) - M] \times 931$ MeV

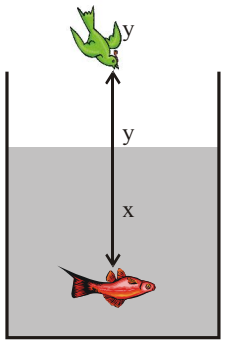
$\sigma = [26 \times 1.00783 + 30 \times 1.00867) - 55.9349] \times 931$

$\sigma = 492$ MeV

20. $V_0 = (A_1 \times A_2)V_s$

$= (10 \times 20) \times 0.01 = 2V$

21. Here $x_{bf} = \mu y + x$



$\frac{dx_{bf}}{dt} = \mu\frac{dy}{dt} + \frac{dx}{dt} = \frac{4}{3}(-12) + 24$

$\Rightarrow v_{bf} = 8$ m/s upward

22. $\frac{I_1}{I_2} = \frac{1}{4} \Rightarrow I_1 = k$ and $I_2 = 4k$

$\therefore$ Fringe visibility $V = \frac{2\sqrt{I_1I_2}}{(I_1+I_2)} = \frac{2\sqrt{k\times4k}}{(k+4k)} = 0.8$

23. For emission of electrons incident energy of each photon must be greater than work function (threshold energy).

26. A real image $\Rightarrow v = R/2$

$U = +\frac{R}{3}$

from $\frac{n_2}{v} - \frac{n_1}{u}$ $\frac{n_2 - n_1}{R}$

$\Rightarrow \frac{2n_2}{R} - \frac{3n_1}{+R} = \frac{n_2 - n_1}{R} \Rightarrow 2n_2 - 3n_1 = n_2 - n_1$

$\Rightarrow n_2 = 2n_1$

$\therefore \frac{n_1}{n_2} = \frac{1}{2}$

27. $I_{max} = \left(\sqrt{I_1} + \sqrt{I_2}\right)^2 = \left(\sqrt{9} + \sqrt{4}\right)^2 = 25$

$I_{min} = \left(\sqrt{I_1} - \sqrt{I_2}\right)^2 = \left(\sqrt{9} - \sqrt{4}\right)^2 = 1$

28. Energy of incident light $E = \frac{12375}{2000} = 6.18\text{eV}$

According to relation $E = W_0 + eV_0$

$\Rightarrow V_0 = \frac{(E - W_0)}{e} = \frac{(6.18\text{eV} - 5.01\text{eV})}{e} = 1.17\,\text{V} \approx 1.2\,\text{V}$

29. $N = N_0\left(\frac{1}{2}\right)^{\frac{15}{5}} = \frac{N_0}{8}$

31. Focal length of plano convex lens

$f = \frac{R}{\mu - 1} = \frac{R}{(1.5-1)} = 2R$

35. From input signals, we have,

A	B	Output NAND gate
0	0	1
1	0	1
0	0	1
1	1	0
0	0	1

36. $m = \frac{f - v}{f} = \frac{+10-(-25)}{+10} = \frac{35}{10}$

$m = \frac{7}{2}$

37. $\lambda_1 = 5893$ Å, $n_1 = 62$, $\lambda_2 = 4358$ Å

As field of view in case of both the wavelengths is same, hence

$n_1\beta_1 = n_2\beta_2$

or $n_1\left(\frac{D\lambda_1}{d}\right) = n_2\left(\frac{D\lambda_2}{d}\right)$

or $n_2 = n_1\left(\frac{\lambda_1}{\lambda_2}\right) = 62 \times \frac{5893}{4358} \cong 84$

38. For an electron,

de Broglic wavelength, $\lambda = \frac{h}{\sqrt{2mK}}$

where h = Planck constant, m = mass of an electron, K = kinetic energy of an electron

Since, h, m remains the same,

$\therefore \quad \lambda \propto \frac{1}{\sqrt{K}}$

or $\frac{\lambda}{\lambda'} = \sqrt{\frac{K'}{K}} = \sqrt{\frac{3K}{K}}$

or $\frac{\lambda'}{\lambda} = \frac{1}{\sqrt{3}}$.

39. In positive half cycle one diode is in forward biasing and other is in reverse biasing while in negative half cycle their polarity reverses, and direction of current is opposite through R for positive and negative half cycles so output is not rectified.

Since R_1 and R_2 are different hence the peaks during positive half and negative half of the input signal will be different.

40. For NAND gate, $\overline{1.1} = \overline{1} = 0$

42. $2\theta = \frac{2\lambda}{d}$ (where d = slit width)

As d decreases, θ increases.

43. According to Einstein's photoelectric equation

$$V_0 = \frac{hc}{e}\left[\frac{1}{\lambda} - \frac{1}{\lambda_0}\right]$$

Hence if λ decreases V_0 increases

44. $E = \frac{V}{d} = \frac{0.5}{5\times10^{-7}} = 10^6$ V/m

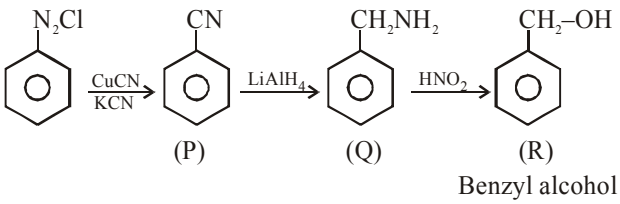
45. This is a truth table for NAND gate because $X = \overline{A \cdot B}$.

46. $CH_2(Br)-CH_2(Br) \xrightarrow{\text{Alc. KOH}} CH(Br)=CH_2 \xrightarrow{NaNH_2} H-C\equiv C-H$

47. Rate of $SN_1 \propto$ Stability of $C^{\oplus}$

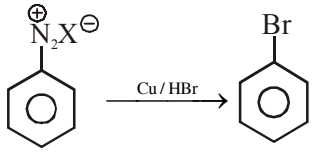
48. Maltose = α-D-glucose + α-D-glucose

49.



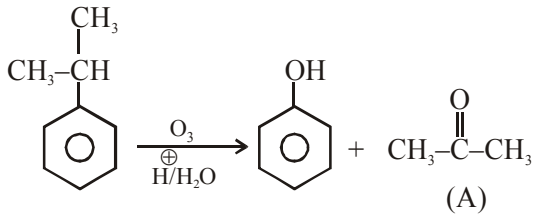
(P) (Q) (R)

Benzyl alcohol

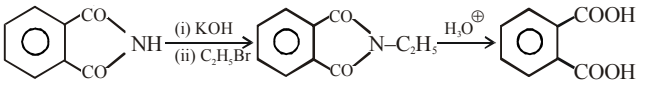
50. 

Gatterman reaction

51. Chloro benzene have partial double bond character between C---Cl, So it does not show SN^2 reaction easily.

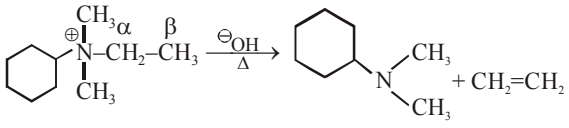
52. 

53.

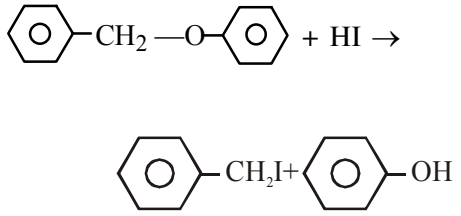


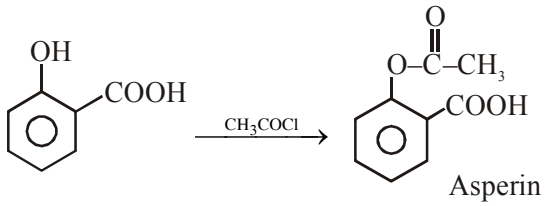
$+C_2H_5–NH_2$

55. Hinsberg test to distinguish 1°, 2°, 3° amine.

57. 

58. CH_3CHO gives Iodoform test

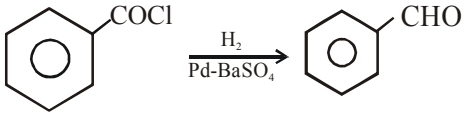
59. 

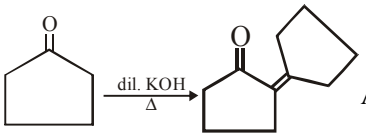
60. 

Asperin
Antipyretic and Analgesic

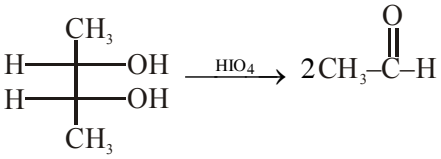
61. Nylon-6,6 is a poly amide

62. Fact

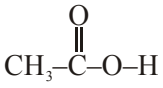
63. 

64. 

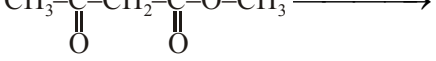
Aldol condensation

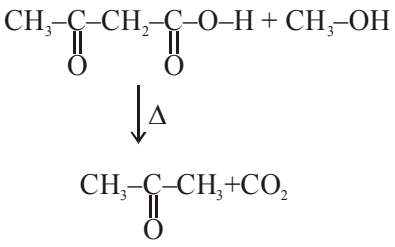
65. 

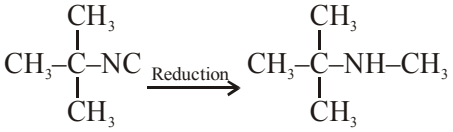
66. Fact

67. 

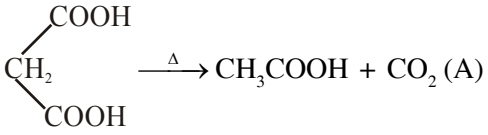
does not give silver mirror test

68. 

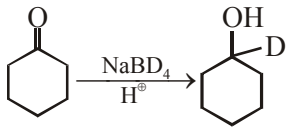


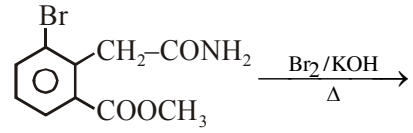
69. 

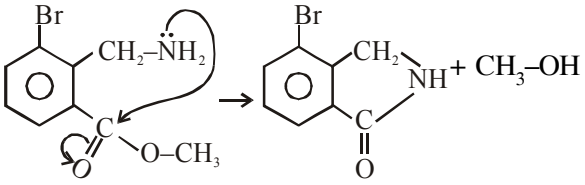
t-butyl methyl amine

70. 

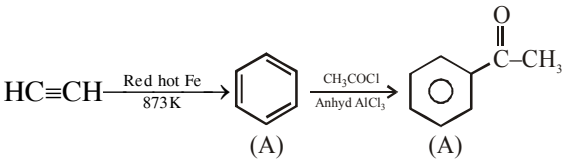
71. Fact

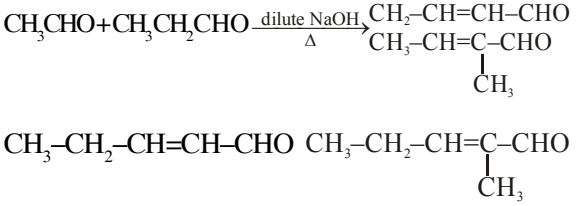
72. 

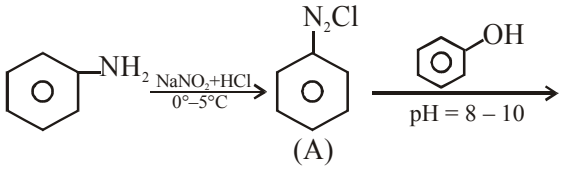
73. 

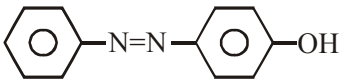


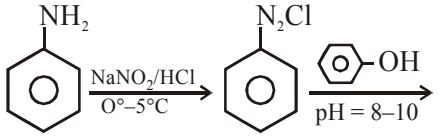
74. Hydrolysis of ester $\alpha \dfrac{-M/-H/-I}{+M/+H/+I}$

75. 

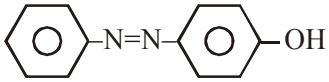
76. 

77. 

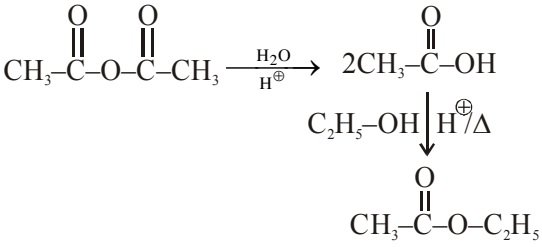


78. 

ethyl amine



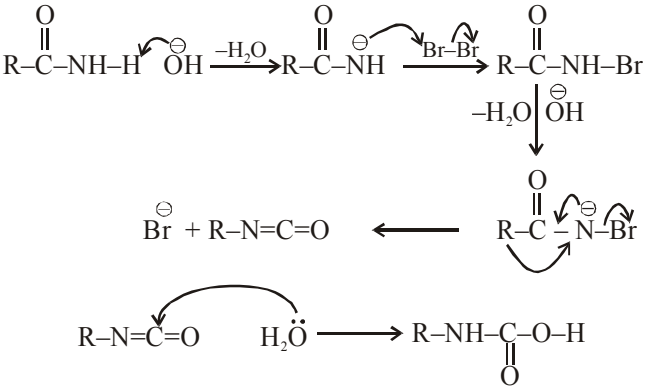
an Azo dye

79. 

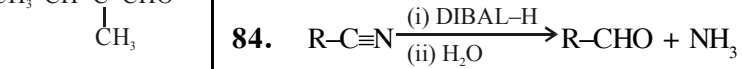
ester

80. Cetyltrimethyl ammonium bromide is cationic detergent

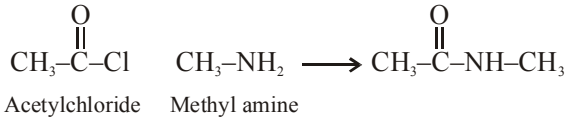
81. $R-NH_2 + CHCl_3 + KOH \rightarrow R\text{-}NC$

82. 

83. Fact

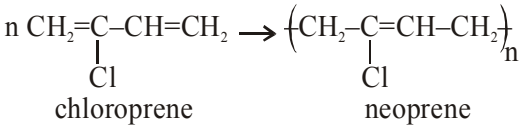
84. 

85. Fact

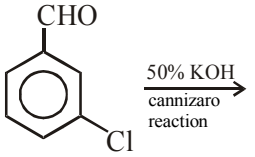
86. 

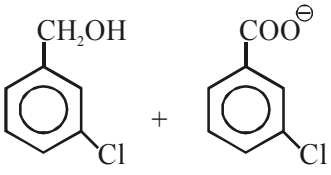
Acetylchloride Methyl amine

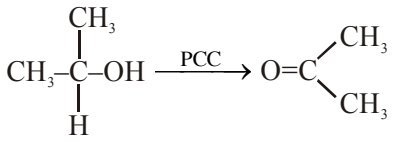
87. Neoprene is



chloroprene neoprene

88. 



89. 

90. Fact

91. NCERT Pg.# 169

92. Module-3 Pg.#2

NCERT XII, Pg.# 233 (E) , 254 (H)

The term '*Keystone Predator*' was coined by paine during his studies on *Pisaster*.

93. NCERT XII, Pg.# 245 (E) , 267 (H)

94. NCERT XII, Pg.# 266,267 (E) , 291 (H)

95. NCERT XII, Pg.# 229 (E) , 249 (H)

96. Anaerobic environment leads to slow decomposition

98. DDT is a non biodegradable pollutant. So does not affects BOD and DO even do not cause eutrophication as DDT is not a nutrient for plants in water body.

99. NCERT XII, Pg# 63

101. NCERT Pg.# 168

102. Module-3 Pg.# 4

103. NCERT XII, Pg.# 224 (E) , 243 (H)

104. NCERT XII, Pg.# 272 (E) , 297 (H)

105. Number of reproductive individuals (adults) are higher than prereproductive individuals (Juvaniles) means population is decending.

106. Chemosynthetic bacteria (Chemoautotrophs) get energy from oxidation reduction of inorganic compounds.

107. 'Z'-represents slope of line. If value of 'Z' is high per unit area species diversity is high.

109. NCERT XII, Pg# 158

111. NCERT Pg.# 168

112. NCERT XII, Pg.# 252 (E) , 275 (H)

113. NCERT XII, Pg.# 223 (E) , 243 (H)

114. NCERT XII, Pg.# 280 (E) , 305 (H)

119. NCERT XII, Pg# 158, 159

121. NCERT Pg.# 168

122. NCERT XII, Pg.# 238 (E) , 259 (H)

123. NCERT XII, Pg.# 226 (E) , 245 (H)

124. NCERT XII, Pg.# 280 (E) , 305 (H)

125. 'r'- stratagist population like oyster, pelagic fishes does not produce few number of large sized offsprings.

127. David Tillman experimentally proved that more the diversity, more the productivity, more the stability of ecosystem.

128. NCERT XII, Pg# 146

131. NCERT Pg.# 169

132. Module-3 Pg.# 13

133. NCERT XII, Pg.# 254 (E) , 277 (H)

134. NCERT XII, Pg.# 283 (E) , 309 (H)

135. Ecological niche of a species is functional role of species in community which is created by resources utilized and conditions tolerated by a species in a community.

136. A, B, C and E are correct

138. NCERT XII, Pg# 151

141. NCERT Pg.# 182

142. Except *Agaricus*, all others are photosynthetic organisms

143. Module-3, Pg.# 33

144. NCERT XII, Pg.# 279 (E) , 304 (H)

145. Predator exploits their prey species but never over exploits them as extinction of their prey species may leads to extinction of predator species.

148. NCERT XII, Pg# 153

151. NCERT Pg.# 167

152. NCERT XII, Pg.# 242 (E) , 264 (H)

153. NCERT XII, Pg.# 260 (E) , 284 (H) Fig. 15.1

154. Module-3 Pg.# 49

158. NCERT XII, Pg# 152

161. NCERT Pg.# 167

162. NCERT XII, Pg.# 242 (E) , 268 (H)

163. NCERT XII, Pg.# 262 (E) , 286 (H) Fig. 15.2

164. Module-3 Pg.# 36

165. Antibiosis is a kind of amensalism (0/–)

166. Age pyramid is characterstic of population.

167. In troposphere bad O_3 is created due to secondary pollution photochemical smog which harms organisms.

168. NCERT XII, Pg# 153

171. Module-3 Pg.# 1

172. NCERT XII, Pg.# 243 (E) , 265 (H)

173. NCERT XII, Pg.# 264 (E) , 288 (H)

174. NCERT XII, Pg.# 228 (E) , 249 (H)

175. Lack of light in deep aquetic ecosystems

178. NCERT XII, Pg# 158