24/03/2022

RM_CODE-A

Corporate Office : Aakash Tower, 8, Pusa Road, New Delhi-110005, Phone : 011-47623456

MM : 720

REVISION TEST SERIES

Time : 3.00 Hrs.

(*for* NEET-2022)

Test - 2

Answers

1. (2)	41. (1)	81. (4)	121. (4)	161. (2)
2. (1)	42. (1)	82. (3)	122. (2)	162. (1)
3. (1)	43. (4)	83. (2)	123. (2)	163. (4)
4. (3)	44. (2)	84. (1)	124. (1)	164. (3)
5. (1)	45. (1)	85. (1)	125. (4)	165. (2)
6. (1)	46. (4)	86. (1)	126. (2)	166. (3)
7. (4)	47. (2)	87. (1)	127. (3)	167. (2)
8. (1)	48. (4)	88. (2)	128. (3)	168. (2)
9. (2)	49. (1)	89. (1)	129. (4)	169. (4)
10. (1)	50. (4)	90. (4)	130. (3)	170. (4)
11. (3)	51. (2)	91. (4)	131. (2)	171. (2)
12. (2)	52. (1)	92. (4)	132. (4)	172. (3)
13. (3)	53. (1)	93. (4)	133. (2)	173. (2)
14. (2)	54. (3)	94. (1)	134. (3)	174. (2)
15. (3)	55. (2)	95. (2)	135. (3)	175. (4)
16. (3)	56. (2)	96. (4)	136. (2)	176. (3)
17. (2)	57. (4)	97. (3)	137. (3)	177. (4)
18. (3)	58. (3)	98. (2)	138. (2)	178. (1)
19. (3)	59. (2)	99. (3)	139. (4)	179. (3)
20. (1)	60. (4)	100. (2)	140. (3)	180. (4)
21. (4)	61. (2)	101. (3)	141. (3)	181. (2)
22. (4)	62. (1)	102. (3)	142. (3)	182. (3)
23. (4)	63. (2)	103. (3)	143. (3)	183. (1)
24. (2)	64. (3)	104. (2)	144. (2)	184. (4)
25. (1)	65. (2)	105. (3)	145. (1)	185. (4)
26. (3)	66. (4)	106. (4)	146. (1)	186. (2)
27. (4)	67. (2)	107. (1)	147. (2)	187. (4)
28. (3)	68. (3)	108. (2)	148. (3)	188. (3)
29. (4)	69. (1)	109. (1)	149. (2)	189. (4)
30. (3)	70. (4)	110. (3)	150. (1)	190. (2)
31. (4)	71. (2)	111. (4)	151. (3)	191. (3)
32. (1)	72. (2)	112. (4)	152. (3)	192. (4)
33. (3)	73. (3)	113. (3)	153. (2)	193. (2)
34. (4)	74. (4)	114. (2)	154. (3)	194. (4)
35. (1)	75. (2)	115. (1)	155. (2)	195. (4)
36. (4)	76. (2)	116. (2)	156. (2)	196. (3)
37. (3)	77. (4)	117. (4)	157. (2)	197. (1)
38. (2)	78. (4)	118. (3)	158. (3)	198. (2)
39. (1)	79. (3)	119. (3)	159. (4)	199. (2)
40. (2)	80. (2)	120. (4)	160. (3)	200. (4)

Aakash BYJU'S

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MM : 720

REVISION TEST SERIES

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(*for* NEET-2022)

Test - 2

Answers & Solutions

PHYSICS

SECTION-A

1. Answer (2)

$R = \frac{V}{I} \propto \cot\theta$

$R = R_0(1 + \alpha\Delta t)$

Here $\theta_1 > \theta_2$

$\therefore \quad R_1 < R_2$

$T_1 < T_2$

2. Answer (1)

Current will not flow in capacitor branch. Hence there is no potential drop across 3 Ω resistor.

$\therefore$ Potential across capacitor

$V = 2$ V

$\therefore \quad Q = CV = 10\ \mu F \times 2\ V = 20\ \mu C$

3. Answer (1)

Total voltage drop across both capacitors

$V = \left(\frac{E}{R + r}\right)R$

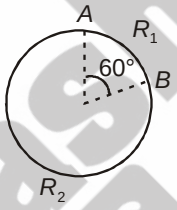
$\therefore$ Voltage across one capacitor

$= \frac{ER}{2(R + r)}$

4. Answer (3)

$\mu = \frac{v_d}{E} = \frac{0.025 \times 2}{100} = 5 \times 10^{-4}\ m^2V^{-1}s^{-1}$

5. Answer (1)



$R_1 + R_2 = 4\ \Omega$

$R_1 = \left(\frac{60°}{360°}\right)(R_1 + R_2)$

$R_1 = \frac{4}{6} = \frac{2}{3}\Omega$

$R_2 = 4 - \frac{2}{3} = \frac{10}{3}\Omega$

$\therefore \quad R_{eq} = \frac{R_1R_2}{R_1 + R_2} = \frac{20}{3 \times 12} = \frac{5}{9}\ \Omega$

6. Answer (1)

Let each resistance is of R

$R_{PQ} = \frac{5}{11}R$

$R_{PR} = \frac{3}{11}R$

$R_{QR} = \frac{4R}{11}$

$\therefore\ R_{PQ}$ is maximum.

7. Answer (4)

$V_A - 1.5 = V_B$

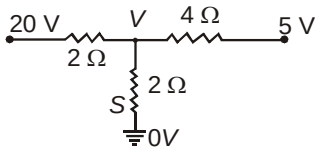
$\Rightarrow V_A = 1.5 + V_B$

$\Rightarrow V_A = 1.5$ V

$V_B - 2.5 + 2 = V_D$

$\Rightarrow V_D = 0 - 2.5 + 2 = -0.5$ V

8. Answer (1)



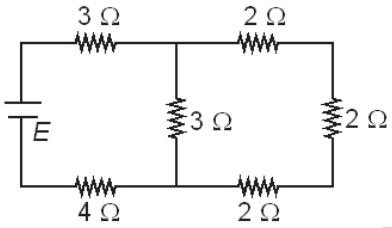
$$= \frac{20-V}{2} + \frac{5-V}{4} = \frac{V-0}{2}$$

$\therefore V = 9$ V

$\therefore$ Current through switch

$$I = \frac{V-0}{2} = \frac{9-0}{2} = 4.5 \text{ A}$$

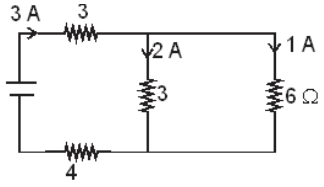
9. Answer (2)



as voltage drop is 2 V

$2 = i \times 2$

$\Rightarrow i = 1$ A



$\Rightarrow E = 3 \times 3 + 3 \times 2 + 4 \times 3$

$= 9 + 6 + 12$

$= 27$ V

10. Answer (1)

$$\frac{55}{R} = \frac{20}{100-20} = \frac{1}{4}$$

$\therefore R = 220\ \Omega$

11. Answer (3)

$V_G - 8 + 3 - 4 + 2 = V_H$

$V_G - V_H = 8 + 2 - 3 = 7$ V

12. Answer (2)

Let R be the resistance of each resistor.

$R_0 = 3R$

R' be the resistance after closing switch.

$$R' = \frac{7R}{3}$$

$$R' = \frac{7}{3} \times \frac{R_0}{3} = \frac{7R_0}{9}$$

13. Answer (3)

On increasing the temperature the resistivity of semiconductor decreases while of conductor resistivity increases.

14. Answer (2)

$$P_{9\Omega} = \frac{V^2}{R} \Rightarrow 36 = \frac{V_1^2}{9}$$

$V_1 = 18$ V

$I_{2\Omega} = 2A + 3A = 5A$

$V_{2\Omega} = 2 \times 5 = 10$ V

15. Answer (3)

$i = \frac{dq}{dt}$ = Slope of charge-time graph

$i = -5$ A

$H = i^2 Rt$

$\Rightarrow H \propto t$

16. Answer (3)

Heat produced

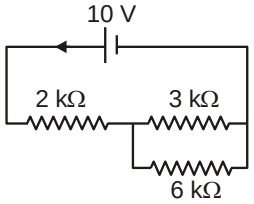
$H = \int i^2 R dt = R \int i^2 dt$

$H = R \times$ Area under i^2-t graph

Area $= \frac{1}{2} \times (6+2) \times 4 = 16$

$\therefore H = 10 \times$ area $= 10 \times 16 = 160$ J

17. Answer (2)



R_{eq} of 3 kΩ and 6 kΩ = 2 Ω

∴ Potential drop across 2 kΩ will be 5 V and across combinations of 3 kΩ and 6 kΩ would also be 5 V. Hence, reading = 5 V

18. Answer (3)

For maximum power

$R_{eq} = r = 6\ \Omega$

$2R||2R||\ R = 6$

$$\frac{R}{2} = 6$$

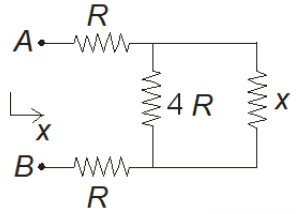
$R = 12\ \Omega$

19. Answer (3)

As 4 volt will drop across *AB* which is 2 m hence for two volt drop *xy* = 1m

20. Answer (1)

Let equivalent resistance between point *A* and *B* is *X*.



$$x = 2R + \frac{4Rx}{4R + x}$$

$\Rightarrow$ $4Rx + x^2 = 8R^2 + 2Rx + 4Rx$

$\Rightarrow$ $x^2 - 2Rx - 8R^2 = 0$

$$\Rightarrow \quad x = \frac{2R \pm \sqrt{4R^2 + 32R^2}}{2}$$

$\Rightarrow$ $x = 4R$

21. Answer (4)

In electric cell, the charge is transported by both the positive and negative ions.

22. Answer (4)

$$100 = \frac{220^2}{R}$$

$$P_1 = \frac{200^2}{R}$$

$\Rightarrow$ $P_1 = 82.6$ W

$\Rightarrow$ Total power = 2 × 82.6 = 165.2 W

23. Answer (4)

$Q = 6t - 3t^2$

$$i = \frac{dQ}{dt} = 6 - 6t$$

$i = 0$, at $t = 1$ s

$$H = \int i^2 R\, dt = \int_0^1 (6 - 6t)^2\, 10 dt$$

$$= 360\int_0^1 (1 + t^2 - 2t)\, dt$$

$$= 360\left(1 + \frac{1}{3} - 1\right)$$

$H = 120$ J

24. Answer (2)

$$\frac{1}{R_{eq}} = \frac{1}{3R} + \frac{1}{6R} \Rightarrow R_{eq} = 2R$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$-\frac{dR_{eq}}{R_{eq}^2} = -\frac{dR_1}{R_1^2} - \frac{dR_2}{R_2^2}$$

$$\frac{dR_{eq}}{R_{eq}} = \frac{R_{eq}}{R_1}\frac{dR_1}{R_1} + \frac{R_{eq}}{R_2}\frac{dR_2}{R_2}$$

$dR = R\ \alpha\ d\theta$

$$\alpha_{eq}\Delta\theta = \frac{2R}{3R}\alpha\Delta\theta + \frac{2R}{6R}2\alpha\Delta\theta$$

$$\alpha_{eq} = \frac{2\alpha}{3} + \frac{2\alpha}{3} = \frac{4\alpha}{3}$$

25. Answer (1)

No current will pass through the grounded resistor. Hence reading of ammeter will be zero.

26. Answer (3)

At steady state, no current flows through the capacitive arm

$$\therefore \quad Q = (10 - 5) \times 0.4 = 2\ \mu C$$

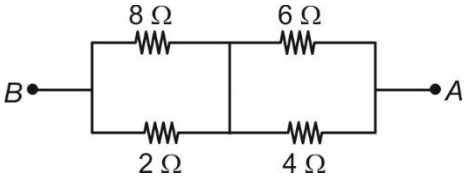
27. Answer (4)

$$\int i^2 R dt = H \Rightarrow H = \int_2^4 25t^2 \times 2dt$$

$$H = 50\frac{t^3}{3}\Big|_2^4 = 933.33\ \text{J}$$

28. Answer (3)

Simplified circuit diagram :



$R = \left(\frac{8\times 2}{8+2}\right) + \left(\frac{6\times 4}{6+4}\right)$

$R = 4\ \Omega$

29. Answer (4)

$i_{incoming} = i_{outgoing}$

$12 = 4 + i \Rightarrow i = 8$ A

30. Answer (3)

$i = \frac{5\times E}{5r+R} = \frac{5\times 4}{5\times 0.4+2} = \frac{20}{2+2} = 5\,\text{A}$

31. Answer (4)

The negative terminal of battery is connected to point *A* and thus no null point will be obtained.

32. Answer (1)

Terminal potential difference across cell while charging.

$V = E + iR$

So, graph will be a straight line.

33. Answer (3)

If current through B_1 is *i*, then current through B_3 and B_2 will be *i*/2.

$\therefore \quad B_2 = B_3 < B_1$

34. Answer (4)

Given circuit is like a balanced wheatstone bridge.

$\therefore \quad V_A = V_B$

35. Answer (1)

$R = \frac{\rho l}{A} = \frac{\rho l}{(V/I)} = \frac{\rho}{V} I^2 \rightarrow$ Parabola

SECTION-B

36. Answer (4)

Current through $2\,\Omega$ resistor = $\frac{4}{4} = 1\,\text{A}$

$V_P - 2(1) + 10 = V_Q$

$Q_Q - V_P = 8$ V

37. Answer (3)

Let current through $12\,\Omega$ resistor be *x*

$12x = 1\times 6 \Rightarrow x = \frac{1}{2}$ A

Remaining current *i.e.* $2 - \left(1 + \frac{1}{2}\right)$ flows through

$R = \frac{1}{2}$ A

Now, $\frac{1}{2}\times R = 1\times 6 \Rightarrow R = 12\,\Omega$

38. Answer (2)

$P = \frac{V^2}{R} \Rightarrow R \propto \frac{1}{P}$

$\frac{R_1}{R_2} = \frac{P_2}{P_1} = \frac{100}{25}$

$\therefore \quad \frac{R_1}{R_2} = \frac{4}{1}$

39. Answer (1)

$E = \frac{\Sigma E_i / r_i}{\Sigma 1/r_i} = \frac{10/2 + 15/3}{1/2 + 1/3} = \frac{10}{5/6} = 12\,\text{V}$

$r_{eq} = \frac{2\times 3}{2+3} = \frac{6}{5}\Omega$

$i = \frac{12}{\frac{6}{5}+4} = \frac{12}{26/5} = \frac{12\times 5}{26} = \frac{30}{13}$ A

40. Answer (2)

Relaxation time of electrons in conductors decreases with increase in temperature.

41. Answer (1)

$\vec{J} = \rho\vec{v}$

42. Answer (1)

$\frac{\rho(l_1 + l_2)}{A} = \frac{\rho_1 l_1}{A} + \frac{\rho_2 l_2}{A}$

$\rho = \frac{\rho_1 \ell_1 + \rho_2 \ell_2}{\ell_1 + \ell_2}$

43. Answer (4)

Internal resistance of cell is

$r = \left(\frac{l_1 - l_2}{l_2}\right)\times R = \frac{76-72}{72}\times 9 = 0.5\,\Omega$

44. Answer (2)

Maximum power will be delivered when external resistor = 0.6 Ω

$$\text{Power} = \left(\frac{4}{1.2}\right)^2 \times 0.6 = 6.67 \text{ W}$$

45. Answer (1)

$$I_g = \frac{3}{50+2950} = 1\text{mA}$$

Now, $I = \frac{2}{3}Ig$

So, $\frac{2}{3} = \frac{3}{50+R}$

R = 4450 Ω

46. Answer (4)

Let x be then potential of junction point

$$\frac{0-x}{5} + \frac{20-x}{4} + \frac{10-x}{2} = 0 \Rightarrow x = \frac{200}{19}$$

$$\therefore \quad i = \frac{x}{5} = \frac{40}{19}\text{A}$$

47. Answer (2)

$$\mu = \frac{v}{E}$$

as $v \propto E$

$\mu \propto E^0$

48. Answer (4)

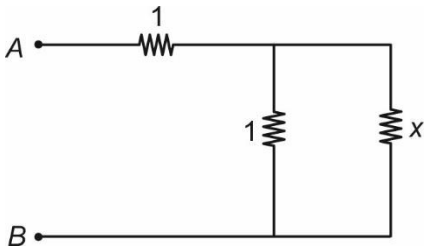
$$i = \frac{E}{(n+1)r}$$

Now, terminal potential difference across the cell

$$V = E - ir = E - \frac{E}{n+1} = \frac{nE}{n+1}$$

49. Answer (1)

Let equivalent resistance of the circuit between points A and B is x.



$$\frac{x(1)}{x+1} + 1 = x$$

$$\Rightarrow \quad x + x + 1 = x^2 + x$$

$$\Rightarrow \quad x^2 - x - 1 = 0$$

$$\Rightarrow \quad x = \frac{1 \pm \sqrt{1+4}}{2} = \frac{1+\sqrt{5}}{2}$$

50. Answer (4)

At any temperature, for series combination

$R = R_1 + R_2$

$$2R_0(1+\alpha T) = R_0(1+\alpha_1 T) + R_0(1+\alpha_2 T)$$

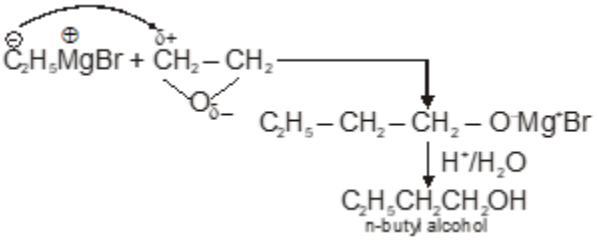
On solving

$$\alpha = \frac{\alpha_1 + \alpha_2}{2}$$

CHEMISTRY

SECTION-A

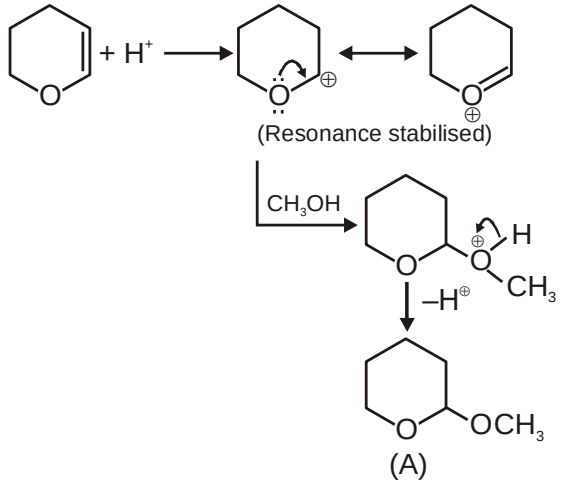
51. Answer (2)



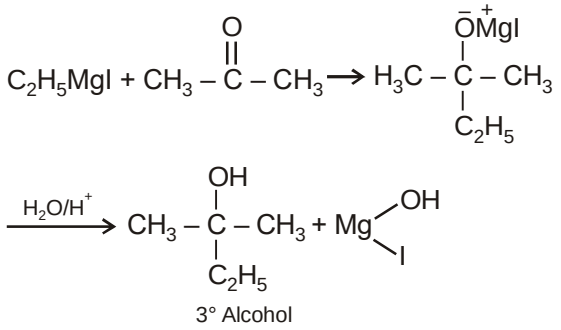
52. Answer (1)

Attack of $Br^{\oplus}$ will be most favoured on the site where +M effect of both –OH group operates and steric hindrance for the electrophilic attack is least.

53. Answer (1)

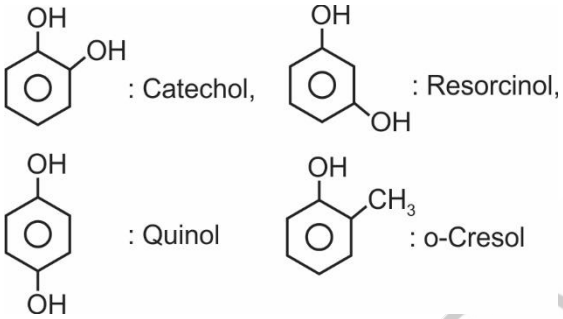


54. Answer (3)

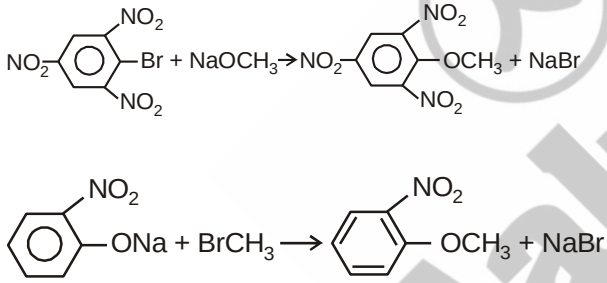


3° Alcohol

55. Answer (2)



56. Answer (2)



57. Answer (4)

When electron withdrawing group present at ortho or para position then acidic strength increases due to –R effect. Because of hydrogen bonding acidic strength of ortho-nitrophenol decreases slightly.

58. Answer (3)

Those alcohol which give stable product after dehydration, can be dehydrated most easily in acidic medium.

59. Answer (2)

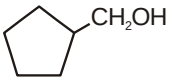
The correct name of the compound is 2-chloro-3-methylpent-2-en-3-ol.

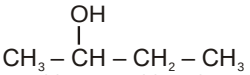
60. Answer (4)

A is propan-2-ol

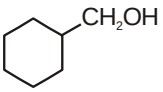
B is propan-1-ol

61. Answer (2)

(1) 

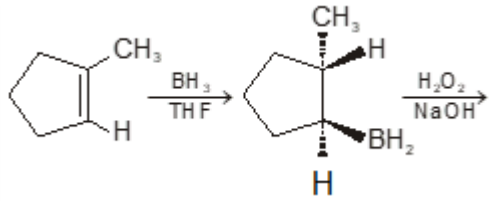
(2) 

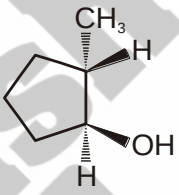
(±)-Butan-2-ol (100%)

(3) 

(4) CH_3CH_2OH

62. Answer (1)

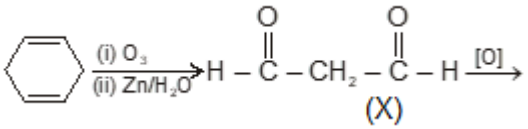


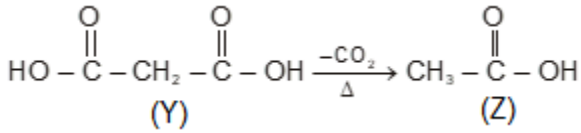


trans-2-methylcyclopentanol

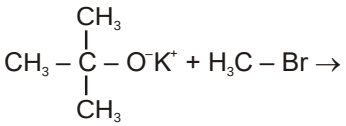
(85%)

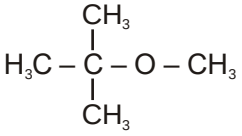
63. Answer (2)





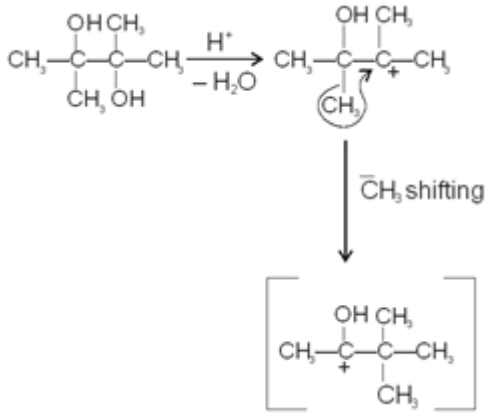
64. Answer (3)





t-Butylmethylether

65. Answer (2)



most stable carbocation due to + R effect of –OH group.

66. Answer (4)

Elimination reaction occurs in the presence of conc. H_2SO_4 and only one double bonded species will formed.

67. Answer (2)

The reaction in which an electron rich nucleophile attacks a positively charged electrophile to replace a learning group is called Nucleophilic substitution reaction.

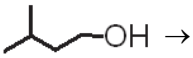
$$\overset{\delta+}{C_2H_5}-\overset{\delta-}{Br}+\overset{+}{Na}\overset{-}{OH}\rightarrow C_2H_5OH+NaBr$$

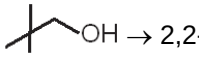
68. Answer (3)

When functional group (–OH) remains attached to primary carbon then it is called as primary alcohol.

(1)  → Pentan-1-ol

(2)  → 2-methylbutan-1-ol

(3)  → 3-methylbutan-1-ol

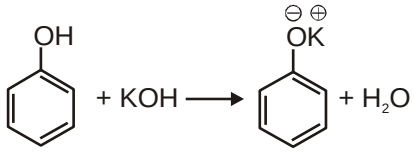
(4)  → 2,2-dimethylpropan-1-ol

69. Answer (1)

3° alcohols are more reactive with HI.

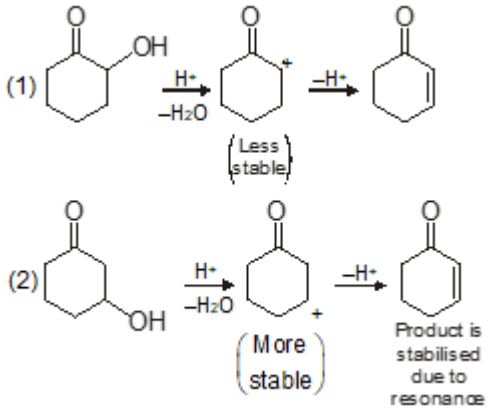
70. Answer (4)

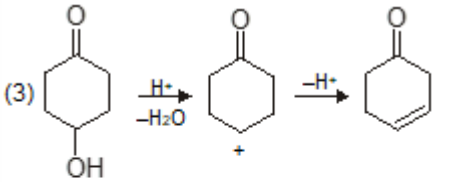
Stronger is the acidic strength faster will be the reaction.



71. Answer (2)

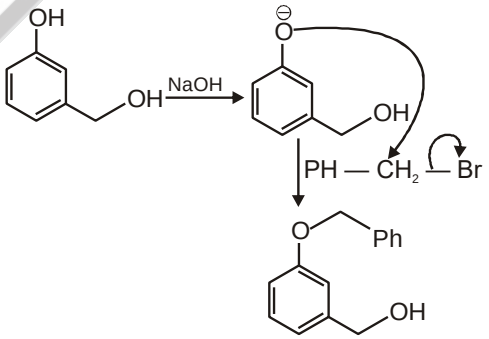
The ease of dehydration is decided by the stability of carbonium ion and the product form.



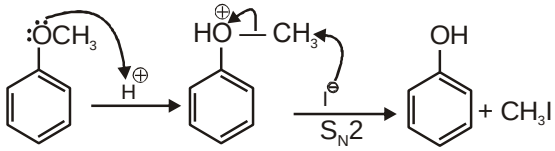


72. Answer (2)

Phenolic hydrogen is easily abstracted by aqueous alkali and phenoxide ion is formed.



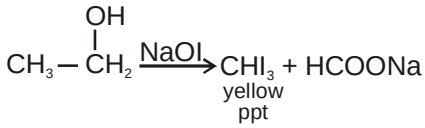
73. Answer (3)



74. Answer (4)

Ethers do not react with Na to give H_2 gas.

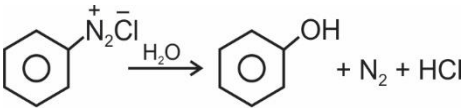
75. Answer (2)



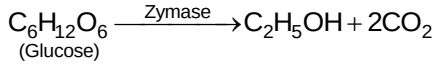
76. Answer (2)

Methoxymethane is an ether therefore it has lower boiling point than ethanol.

77. Answer (4)



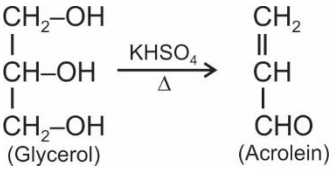
78. Answer (4)



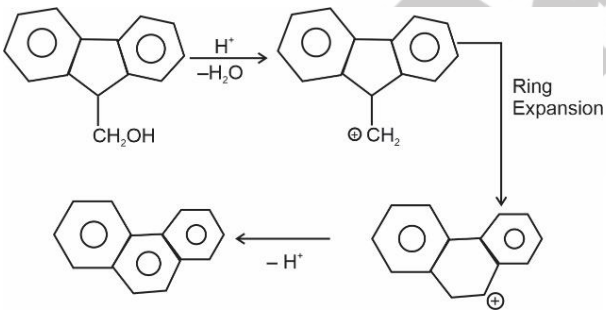
79. Answer (3)

Boiling Point :

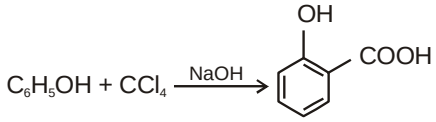
80. Answer (2)



81. Answer (4)



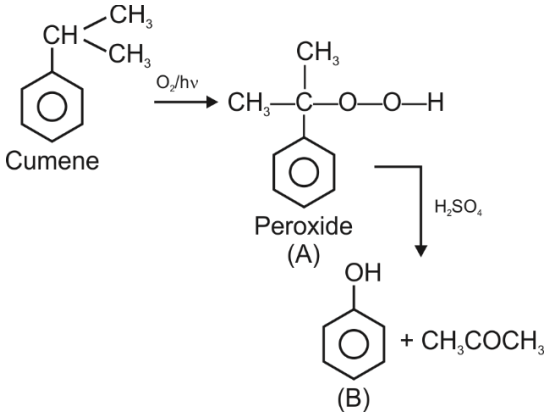
82. Answer (3)



83. Answer (2)

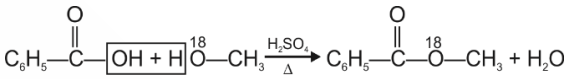
Lesser is the electron density on the ring, greater is the bond order of C–O bond and shorter is the bond length of C–O bond of phenol.

84. Answer (1)



85. Answer (1)

Esterification reaction



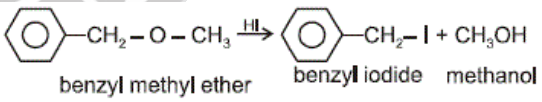
SECTION-B

86. Answer (1)

CO_2 is the electrophile in the given reaction.

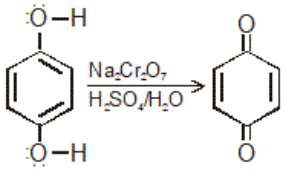
87. Answer (1)

The reaction proceeds by S_N1 mechanism.

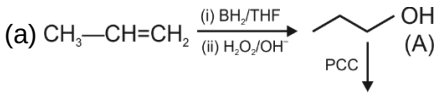


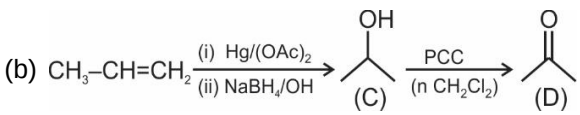
88. Answer (2)

Oxidation of 1, 4-Dihydroxy benzene.



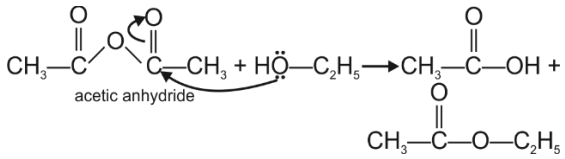
89. Answer (1)





∴ B and D are functional isomers of each other.

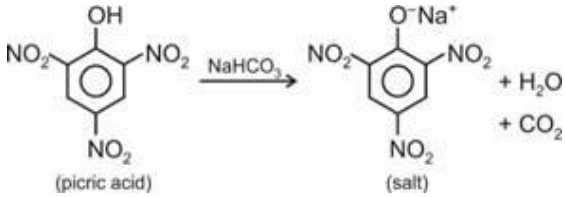
90. Answer (4)



91. Answer (4)

1°-alcohol gives red colour in Victor Meyer test.

92. Answer (4)



93. Answer (4)

More is the stability of carbocation more will be the reactivity of alcohol towards Lucas reagent.

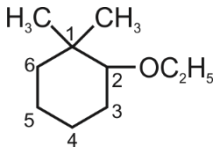
∴ Correct order of reactivity of alcohol towards Lucas reagent is

$(CH_3)_3COH > (CH_3)_2CHOH > CH_3CH_2OH > CH_3OH$

94. Answer (1)

Reactivity of alcohols towards esterification on the basis of steric hindrance is $1^o > 2^o > 3^o$.

95. Answer (2)



2-Ethoxy-1,1-dimethylcyclohexane

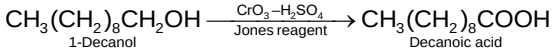
96. Answer (4)

Solubility of ethers in water decreases with increase in molar mass.

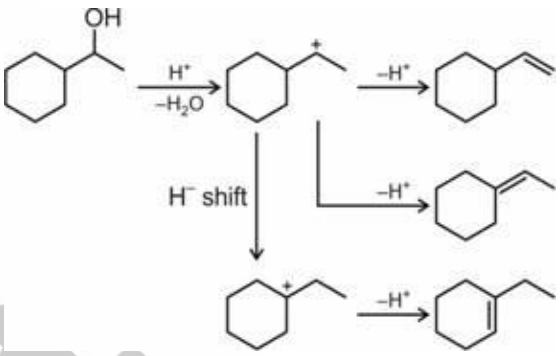
97. Answer (3)

When phenol reacts with $FeCl_3$ gives purple colour.

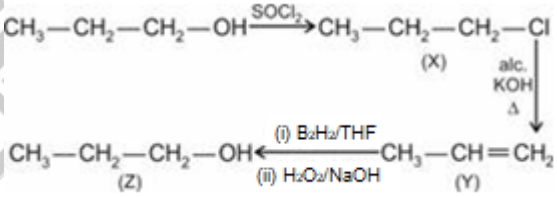
98. Answer (2)



99. Answer (3)



100. Answer (2)



BOTANY

SECTION-A

101. Answer (3)

Down's syndrome is an example of non-disjunction. It is failure of two homologous chromosomes to pass to separate cells during first meiotic division, or of the two chromatids of a chromosome to pass to separate cells during mitosis or during the second meiotic division.

Non disjunction results in an embryo with three copies of particular chromosome instead of usual two.

102. Answer (3)

Sickle cell anaemia occurs due to altered amino acid at 6th position of β-chain of globin protein.

It occurs by point mutation *i.e.,* transversion of A by T in DNA which replaces amino acid glutamic acid by valine.

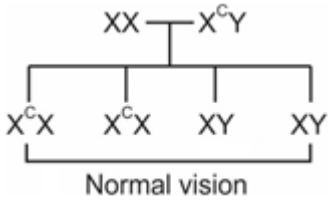
103. Answer (3)

A male individual affected with Klinefelter's syndrome are sterile with overall masculine development and some female characteristics (*e.g.* Feminine pitched voice, development of breast or gynaecomastia).

104. Answer (2)

Genotype of woman = XX

Genotype of man = X^CX



105. Answer (3)

X-rays is a physical mutagen

106. Answer (4)

Mendel experimented on garden pea for seven years.

107. Answer (1)

Drosophila – Males are heterogametic.

Birds and moths – Females are heterogametic.

108. Answer (2)

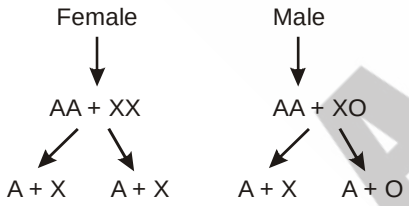
Chromosome complement of an individual inflicted with Klinefelter's syndrome is 44 + XXY.

109. Answer (1)

R. C. Punnett proposed Punnett square.

110. Answer (3)

Male genotype = AA + XO



Male progeny = AA + XO

Female progeny = AA + XX

111. Answer (4)

Thalassemia is an autosomal recessive disorder. While crisscross inheritance is shown by X-linked recessive disorder.

112. Answer (4)

Intermediate phenotypes are frequent in polygenic inheritance.

113. Answer (3)

Trisomy is a type of aneuploidy in which a particular chromosome is three in number.

Triple fusion results triploid condition of endosperm in angiosperm plants.

114. Answer (2)

By the cross between AbBbccDd and AAbbCcDD the probability of

$Aa = \frac{1}{2}$

$bb = \frac{1}{2}$

$Cc = \frac{1}{2}$

$Dd = \frac{1}{2}$

$\therefore$ Percentage of AabbCcDd $= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times 100$

$= \frac{100}{16} = 6.25$

115. Answer (1)

Morgan proposed term linkage and recombination.

116. Answer (2)

A classical example of point mutation is sickle cell anaemia.

117. Answer (4)

Four different phenotypes are possible in F_2 generation of a typical Mendelian dihybrid cross.

118. Answer (3)

Loss or gain of segment of DNA or chromosome results in alteration in chromosomes. This results in chromosomal aberration.

119. Answer (3)

Myotonic dystrophy is a dominant autosomal.

120. Answer (4)

Terminal flower position is a recessive trait in pea plant.

121. Answer (4)

Pea plants show self-pollination in nature.

122. Answer (2)

All unaffected individuals in generation Q are heterozygous for the trait and are carriers of trait.

123. Answer (2)

Number of heterozygous locus (n) = 2

Types of gametes = $2^n = 2^2 = 4$

124. Answer (1)

Term "X-body" was given by Henking.

125. Answer (4)

Chromosome compliment in Turner's syndrome is 44 + XO.

126. Answer (2)

Short life cycle and smaller number of morphologically distinct chromosomes in *Drosophila* are suitable characters for experimental genetics.

127. Answer (3)

Honey bee males are haploid and fertile.

128. Answer (3)

Gene controlling starch synthesis in pea shows

(1) Pleiotropy.

(2) Incomplete dominance (Bb form intermediate size starch grains).

(3) Complete dominance (Bb, seed shape is round).

129. Answer (4)

Tt x tt is a test cross

130. Answer (3)

Alleles of a gene will always be situated on homologous sites of homologous chromosomes.

131. Answer (2)

Woman I^AI^B × Man I^Bi

F_1 Generation I^AI^B I^Ai I^BI^B I^Bi

$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$

Probability of getting AB blood group = $\frac{1}{4}$

132. Answer (4)

Klinefelter's male show gynecomastia.

133. Answer (2)

Genes responsible for eye colour and body colour are linked genes and are present on X-chromosome.

134. Answer (3)

In butterfly, sex determination is $\underset{ZZ}{\male} - \underset{ZO}{\female}$.

In grasshopper, sex determination is $\underset{XO}{\male} - \underset{XX}{\female}$.

135. Answer (3)

The inheritance pattern in given pedigree exhibits autosomal recessive trait.

SECTION-B

136. Answer (2)

In pea plant, green seed colour is a recessive trait

Dominant traits are :

Green pod colour.

Full pod shape.

Yellow seed colour.

137. Answer (3)

Initially Mendel took 34 varieties of pea plants then 22 but ultimately worked with only 7 pairs of varieties or 14 true breeding pea plants.

138. Answer (2)

RRYy, rrYy, RrYY and Rryy plants are homozygous for only one trait. They are produced in 2 : 2 : 2 : 2 ratio so their proportion among F_2 population is = $\frac{8}{16} = \frac{1}{2}$

139. Answer (4)

If the modified allele produces non-functional enzyme or no enzyme at all, it will be not equivalent to unmodified allele.

140. Answer (3)

Pleiotropy can be observed in different organisms.

141. Answer (3)

Phenotype of hybrid in incomplete dominance is intermediate of the parents.

142. Answer (3)

AB blood group in humans is a good example of codominance.

143. Answer (3)

Since one parent in all given options is aabb (test cross). Thus types of gamete will depend only on 2nd parent.

AABb × aabb, AABB × aabb, AaBb × aabb

2 types of gametes 1 type of gamete 4 types of gametes

AaBB × aabb

2 types of gametes

144. Answer (2)

Violet flower colour is a dominant trait.

145. Answer (1)

Sutton and Boveri found that there is a striking relationship between Mendelian factors and the chromosomes.

146. Answer (1)

Mendelian dihybrid phenotypic ratio is 9 : 3 : 3 : 1, out of which $\frac{9+1}{16}$ is parental proportion $\left(\frac{10}{16}\right)$ and $\frac{3+3}{16}$ is recombinant proportion $\left(\frac{6}{16}\right)$.

147. Answer (2)

Genotypic as well as phenotypic ratio is 1:1 for F_1 generation.

148. Answer (3)

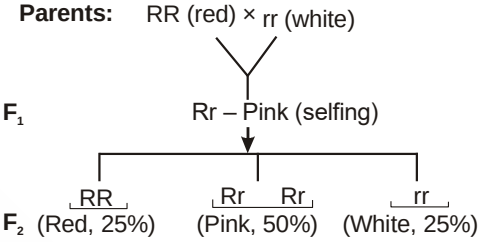
Mendelian dihybrid test cross gives 1:1:1:1 as phenotypic as well as genotypic ratio.

149. Answer (2)

F_2 phenotypic ratio in incomplete dominance is

1 : 2 : 1

(Red : Pink : White)



150. Answer (1)

Alleles are two contrasting forms of a gene.

A pleiotropic gene may affect more than one phenotypes.

ZOOLOGY

SECTION-A

151. Answer (3)

Saheli checks implantation.

152. Answer (3)

Male infertility due to low sperm count can be overcome by AI.

153. Answer (2)

MTP is safe up to first trimester of pregnancy.

154. Answer (3)

Vasectomy is most effective method of contraception because male gametes are not part of the ejaculate released into the female reproductive system. In vasectomy, vas deferens is cut and the two ends are ligated.

155. Answer (2)

In tubectomy fallopian tubes are cut and tied.

156. Answer (2)

Cu 7 and multiload 375 are IUDs which releases copper ions that increase phagocytosis of sperms. LNG-20 is also an example of medicated IUD which releases progesterone.

157. Answer (2)

Genetic defects and biochemical defects are diagnosed by amniocentesis.

158. Answer (3)

In menstrual cycle, chances of fertilisation are higher from day (10-17) in a fertile female. The absence of copulation during this period is known as periodic abstinence/rhythm method/calendar method.

159. Answer (4)

Higher concentration of estrogen and progesterone during luteal phase give negative feedback to hypothalamus, thereby inhibiting the release of GnRH from hypothalamus and LH, FSH from pituitary

160. Answer (3)

CuT, Cu7 and Multiload 375 are copper releasing IUDs.

161. Answer (2)

Indian government legalised MTP in 1971.

162. Answer (1)

Embryo more than 8 blastomers are transferred into uterus (IUT) and less than 8 blastomeres are transferred into fallopian tube (ZIFT).

163. Answer (4)

Oral pills inhibit ovulation and implantation.

164. Answer (3)

Trichomoniasis is caused by protozoa *Trichomonas vaginalis.*

165. Answer (2)

Increase in MMR can lead to decline in population size.

166. Answer (3)

During lactation, plasma concentration of prolactin increases which acts as GnRH inhibitor, preventing follicular development and ovulation resulting into amenorrhoea, named lactational amenorrhoea.

167. Answer (2)

In IVF, zygote or embryo upto 8 celled stage are transferred into fallopian tube.

168. Answer (2)

Mifepristone is antagonistic to action of progesterone.

169. Answer (4)

HIV, AIDS and genital herpes are non-curable diseases in humans.

170. Answer (4)

Syphilis –*Treponema pallidum*

Genital warts – Human Papilloma Virus

AIDS – Human Immunodeficiency Virus

171. Answer (2)

GIFT – Gamete Intra Fallopian Transfer.

172. Answer (3)

Concentration of prolactin hormone is high during lactation which inhibits GnRH.

173. Answer (2)

Syphilis is curable in primary stage and its chancres are painless.

174. Answer (2)

Steroidal oral contraceptive pills are consumed for a period of 21 days starting preferably within the first five days of menstrual cycle but nonsteroidal oral contraceptive pills like Saheli is taken only once in a week.

175. Answer (4)

'X'-GIFT

'Y' - *in vivo*

176. Answer (3)

Saheli is a non-steroidal preparation.

177. Answer (4)

In-vitro fertilization is carried out in test tube baby programme.

178. Answer (1)

Barrier method includes condoms, diaphragms, vaults, cervical caps etc.

179. Answer (3)

Progestogens alone or in combination with estrogen can be used by females as injections or implants under the skin.

180. Answer (4)

The formation of sperm is not affected by vasectomy

181. Answer (2)

The incidence of STIs are reported to be very high among persons of age group 15-24 years.

182. Answer (3)

According to 2011 census report, the population growth rate in India was less than 2 per cent, i.e., 20/1000/year.

183. Answer (1)

IUD is one of the most widely accepted method of contraception in India

184. Answer (4)

Pills are very effective with lesser side effects and are well accepted by the females.

185. Answer (4)

Implants contains progestins as active ingredient. They inhibit ovulation and implantation as well as alter the quality of cervical mucus to prevent/retard the entry of sperms.

SECTION-B

186. Answer (2)

Family planning programmes in India were initiated in 1951

187. Answer (4)

For population growth, unprotected sexual co-habitation is not promoted.

188. Answer (3)

Natural methods of contraception work on the principle of avoiding chances of ovum and sperms meeting.

189. Answer (4)

Administration of progestogens or progestogen-estrogen combinations or IUDs within 72 hours of coitus have been found to effective as emergency contraceptives.

190. Answer (2)

Noreplant is an example of implant.

191. Answer (3)

Haemophilia, cholera and malaria are not sexually transmitted diseases.

192. Answer (4)

RCH – Reproductive and child healthcare.

193. Answer (2)

Condoms are not reusable. Condoms are made up of thin rubber/latex sheath that are used to cover the penis in the males and vagina in the females.

194. Answer (4)

The hormone releasing IUDs make the uterus unsuitable for implantation and the cervix hostile to the sperms.

195. Answer (4)

Government of India legalised MTP in 1971 with some strict conditions to avoid its misuse.

196. Answer (3)

Opinion of one registered medical practitioner is required for MTP, if the pregnancy has lasted less than 12 weeks.

197. Answer (1)

Saheli is a non-steroidal pill and it does not inhibit ovulation

198. Answer (2)

Day of ovulation = Number of menstrual days – 14

= 40 – 14

= 26

Range of fertile period

= 26 + 3 = 29

= 26 – 4 = 22

22nd to 29th days

199. Answer (2)

GIFT – Gametic intra fallopian transfer

AI – Artificial insemination

200. Answer (4)

Nirodh is a popular brand for male condom.

❑ ❑ ❑