

## SOLUTIONS

1. A passenger in an aeroplane may see a primary and a secondary rainbow like concentric circles.

2. Number of images,  $n = \frac{360^\circ}{\theta} - 1$   
 $3 = \frac{360^\circ}{\theta} - 1$   
 $\Rightarrow \theta = 90^\circ$

3. From the formula,  $\sin C = \frac{\mu_r}{\mu_d}$   
 $= \frac{v_d}{v_r}$   
 $= \frac{v_{med}}{v_{air}}$   
 $= \frac{\left(\frac{10x}{t_2}\right)}{\left(\frac{x}{t_1}\right)}$   
 $= \frac{10t_1}{t_2}$   
 $C = \sin^{-1}\left(\frac{10t_1}{t_2}\right)$

4. Where phase difference is 0, intensity is maximum,

where,  $\phi = \frac{\pi}{2}$  or  $\frac{\phi}{2} = \frac{\pi}{4}$ ,

the intensity will be  $I = I_{max} \cos^2 \frac{\phi}{2} = \frac{I_{max}}{2}$

$\therefore$  The desired ratio is 2:1

5. de-Broglie wavelength,  $\lambda = \frac{h}{\sqrt{2mkT}}$   
 $= \frac{6.62 \times 10^{-34}}{\sqrt{2 \times 1.67 \times 10^{-27} \times 1.38 \times 10^{-23} T}}$   
 $= \frac{6.62 \times 10^{-34}}{2.15 \times 10^{-25} \sqrt{T}} \text{ m}$

$$= \frac{3.079}{\sqrt{T}} \times 10^{-9} \text{ m} = \frac{30.79}{\sqrt{T}} \text{ \AA} \approx \frac{30.8}{\sqrt{T}} \text{ \AA}$$

6. Erect diminished image is formed by convex mirror.

7. Given,  $m = +\frac{1}{2}$ ,  $f = 2\text{m} = 200 \text{ cm}$ ,  $u = ?$

$$\therefore \text{Magnification, } m = \frac{f}{(f - u)}$$

$$\Rightarrow +\frac{1}{2} = \frac{200}{(200 - u)}$$

$$\Rightarrow 200 - u = 400 \Rightarrow u = -200\text{cm}$$

$$\Rightarrow u = -2\text{m}$$

8. Magnifying power,

$$m_{\infty} = \frac{(L_{\infty} - f_o - f_e) \cdot D}{f_o f_e}$$

$$\Rightarrow 45 = \frac{(L_{\infty} - 1 - 5) \times 25}{1 \times 5}$$

$$\Rightarrow \text{The length of the tube, } L_{\infty} = 15 \text{ cm}$$

9. Now, here we are given Fresnel distance equal to 20 m,  $\lambda = 450 \text{ nm}$ , we have to estimate value of a

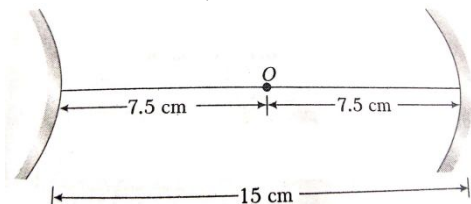
$$\text{Putting } Z_F = \frac{a^2}{\lambda}, a = \sqrt{Z_F \lambda} = 3 \times 10^{-3} \text{ m or } 3\text{mm}$$

10. When the distance is increased, frequency of incident light and hence, the stopping potential does not change. But the intensity and hence, the saturation current decreases nine times.

$$[\because \text{Intensity of incident radiation} \propto \frac{1}{(\text{distance})^2}]$$

11. Sky appears blue due to scattering. In absence of atmosphere no scattering will occur. Therefore sky will be seen black.

12. For concave mirror,



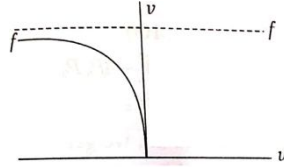
Using the relation,

$$\frac{1}{v} - \frac{1}{7.5} = -\frac{1}{7.5}$$

$$\therefore v = -15\text{cm}$$

Therefore position of final image will be at the pole of the convex minor.

13.  $u$  changes from 0 to  $-\infty$ . Then  $v$  will change from 0 to  $+f$ .



14. Distance of 5<sup>th</sup> bright fringe from central fringe,

$$x_{5D} = \frac{5\lambda d}{d}$$

Distance of 3<sup>rd</sup> dark fringe from central fringe,

$$x_{3D} = \frac{(2 \times 3 - 1) \times D}{2d} = \frac{5 \lambda D}{2 d}$$

Required distance,

$$x_{5D} - x_{3D} = \left(5 - \frac{5}{2}\right) \frac{\lambda D}{2} = \frac{5}{2} \times \frac{5 \times 10^{-7} \times 1}{1 \times 10^{-3}} = 1.25 \text{ mm}$$

15. Stopping potential equals to maximum kinetic energy since, stopping potential is varying linearly with the frequency. Therefore, maximum KE for both the metals also vary nearly with frequency.
16. Sun is visible a little before the actual sunrise and until a little after the actual sunset. This is due to refraction.
17. Hypermetropia can be removed by using a convex lens.

Focal length of used lens,  $f = +d = +40 \text{ cm}$   
 $= +$  (defected near point)

$$\therefore \text{Power of lens} = \frac{100}{f(\text{cm})} = \frac{100}{40} = 2.5 \text{ D}$$

18. According to lens maker's formula,

$$P = \frac{1}{f} = (\mu - 1) \left( \frac{1}{R} - \frac{1}{(-R)} \right)$$

$$f_{\text{biconvex}} = \frac{R}{2(\mu - 1)}$$

$$f_{\text{plano}} = \frac{R}{(\mu - 1)}$$

$$f_{\text{plano}} = 2f_{\text{biconvex}}$$

19. We have,  $\frac{10\lambda D}{\mu d} = \left(6 - \frac{1}{2}\right) \frac{\lambda D}{d}$

$$\frac{10}{\mu} = \frac{11}{2}$$

$$\mu = \frac{20}{11} = 1.818$$

20. As,  $I = \frac{P}{A} = \frac{5 \times 10^{-3}}{1 \times 10^{-6}} = 5 \times 10^3 \text{ W / m}^2$

Force on the surface,  $F = \frac{2P}{c} = \frac{2 \times 5 \times 10^{-3}}{3 \times 10^8} = 3.3 \times 10^{-11} \text{ N}$

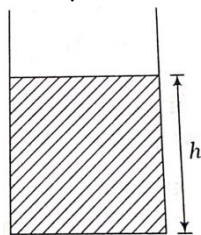
Pressure on the surface,  $= \frac{2I}{c} = \frac{2 \times 5 \times 10^3}{3 \times 10^8} = 3.3 \times 10^{-5} \text{ N / m}^2$

21. After completely immersed in water, this bag will behave as convergent lens.

22. Given,  $A = 60^\circ$  and  $\delta_m = 30^\circ$

$\therefore$  Refractive index of prism,  $\mu = \frac{\sin\left(\frac{A + \delta_m}{2}\right)}{\sin\frac{A}{2}} = \frac{\sin 45^\circ}{\sin 30^\circ} = \sqrt{2}$

23. According to the question,  $\frac{h}{\mu} = \frac{21}{2} = 10.5$



$\therefore$  Height,  $h = 10.5 \times \frac{4}{3} \Rightarrow h = 14 \text{ cm}$

24.  $\Delta I = (I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \phi_1) - (I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \phi_2)$   
 $= 2\sqrt{I_1 I_2} (\cos \phi_1 - \cos \phi_2) = 2 \times 2I \left( \cos \frac{\pi}{2} - \cos \pi \right) = 4I$

25.  $n h v = m c \Delta\theta$

26. The size of the object in accordance with the Fresnel's displacement law is given by  $\sqrt{x_1 x_2}$ .

27. We have,  $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

$\therefore \frac{1}{30} - \frac{1}{(-u)} = \frac{1}{f}$  or  $\frac{1}{30} + \frac{1}{u} = \frac{1}{f}$  ... (i)

Similarly,  $\frac{1}{120} + \frac{1}{u-90} = \frac{1}{f}$  ... (ii)

On solving Eqs. (i) and (ii), we get

The focal length of the lens,  $f = 24 \text{ cm}$

28. For objective,

$$\frac{1}{v_0} - \frac{1}{-200} = \frac{1}{50}$$

$$\therefore v_0 = \frac{200}{3} \text{ cm}$$

For eye-piece,

$$\frac{1}{-25} - \frac{1}{(-u_e)} = \frac{1}{5}$$

$$\therefore u_e = \frac{25}{6}$$

Therefore, separation between objective and eye-piece,

$$L = v_0 + u_e = \frac{200}{3} + \frac{25}{6} = \frac{425}{6} = 71 \text{ cm}$$

29. Option (3)

$$Y_n = \frac{nD\lambda}{d}$$

$$Y_n = 10^{-3} \text{ m}, D = 0.5 \text{ m}, d = 0.5 \times 10^{-3} \text{ m}$$

$$\lambda = \frac{500}{n} \text{ nm}$$

30. Energy of photon is  $E = \frac{hc}{\lambda_{\text{photon}}} \Rightarrow \lambda_{\text{photon}} = \frac{hc}{E}$

$$\lambda_{\text{electron}} = \frac{h}{\sqrt{2mE}}$$

$$\frac{\lambda_{\text{photon}}}{\lambda_{\text{electron}}} = c \sqrt{\frac{2m}{E}}$$

31. The resolving power of telescope =  $\frac{a}{1.22\lambda}$

Where, a = aperture of telescope

$\therefore$  Resolving power aperture of telescope

If aperture of telescope is decreased, then the resolving power will decrease.

32. Resultant combination of focal length,

$$F_{\text{comb}} = \frac{f_1 f_2}{f_1 + f_2} = \frac{f(-f)}{f + (-f)} = \infty$$

33. As,  $y_a = \left( \frac{n_1}{n_2} \right) y$

Here, y = actual depth

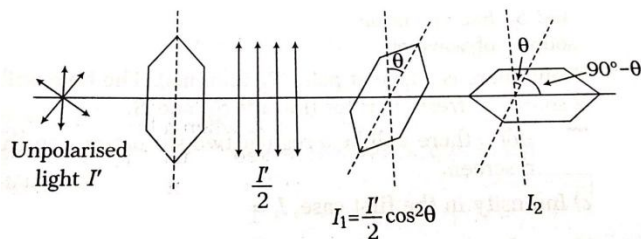
And  $y_a$  = apparent depth

$$\therefore y = \left( \frac{n_2}{n_1} \right) \cdot y_a \Rightarrow \left( -\frac{dy}{dt} \right) = \frac{n_2}{n_1} \left( -\frac{dy_a}{dt} \right) = \frac{n_2 x}{n_1}$$

The amount of water drained in cc/min

$$\therefore \frac{dV}{dt} = A \cdot \left( -\frac{dy}{dt} \right) = \frac{\pi R^2 n_2 x}{n_1}$$

34.  $I_2 - I_1 \cos^2(90^\circ - \theta) = \frac{I'}{2} \cos^2 \theta \sin^2 \theta = \frac{I'}{8} (\sin 2\theta)^2$



$$3 = \frac{32}{8} (\sin 2\theta)^2$$

$$\sin 2\theta = \frac{\sqrt{3}}{2} = \sin 60^\circ \text{ or } \sin 120^\circ$$

$$\theta = 30^\circ \text{ or } 60^\circ$$

35.  $E = \frac{12375}{\lambda(\text{\AA})} = \frac{12375}{3500} \text{ eV} = 3.53 \text{ eV}$

Since,  $E > W_b$  but  $E < W_A$  photoelectron will be emitted by metal B.

36. The magnifying power of the telescope in normal adjustment,

$$m = \frac{f_o}{f_e} = \frac{100}{5} = 20$$

37. Option (2)

$$\text{Distance of 1st maxima from central fringe} = \frac{\lambda D}{d} \quad [D = x]$$

$$\text{Distance of 1st minima} = \frac{\lambda D}{2d}$$

$$D \text{ at time } t = D_t = x + vt$$

$$\frac{\lambda x}{d} = \frac{\lambda(x + vt)}{2d}$$

$$x = vt \quad \text{or} \quad t = \frac{x}{v}$$

38. We have,

$$\beta = \frac{\lambda D}{d}$$

$\therefore$  The arrangement is placed in a liquid of refractive index  $n$

$$\therefore \lambda' = \frac{\lambda}{n}$$

Therefore fringe width

$$B' = \frac{\lambda D}{dn}$$

or  $B' = \frac{\beta}{n}$

39. Location of the point,  $y = \frac{w}{4} = \frac{\lambda D}{4d}$

$$\Rightarrow \Delta x = \frac{yd}{D} = \left(\frac{\lambda D}{4d}\right)\left(\frac{d}{D}\right) = \frac{\lambda}{4}$$

$$\Rightarrow \phi = \frac{2\pi}{\lambda} \Delta x = \frac{\pi}{2}$$

$$\therefore I_R = I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \phi$$

$$\therefore 4I = 2I + I_2 + 0$$

$$\Rightarrow I_2 = 2I$$

40.  $E = \frac{12375}{\lambda(\text{in } \text{Å})} = \frac{12375}{4360} = 2.84 \text{ eV}$

$\therefore K_{\text{max}} = E - W = 1.6 \text{ eV}$   
or the retarding potential is 1.6 V

41. For combination of one convex and one concave lens

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2}$$

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{-f_2}$$

$$\frac{1}{F} = \frac{1}{f_1} - \frac{1}{f_2}$$

$$\Rightarrow F = \frac{f_1 f_2}{f_2 - f_1}$$

If  $f_1 > f_2$  then F will be negative

42.  $\therefore$  Power of the lens =  $\frac{1}{\text{focal length}}$

Focal length of combination of convex and concave lenses is given by

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2}$$

where,  $f_1$  and  $f_2$  be the focal length of convex and concave lenses, respectively,

Now,  $\frac{1}{F} = \frac{1}{0.4} + \frac{1}{-(0.25)}$

$$\frac{1}{F} = -1.5$$

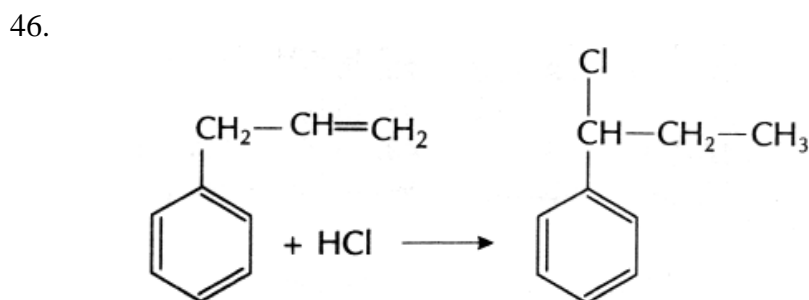
Power,  $P = -1.5D$

$$\left( \because P = \frac{1}{F} \right)$$

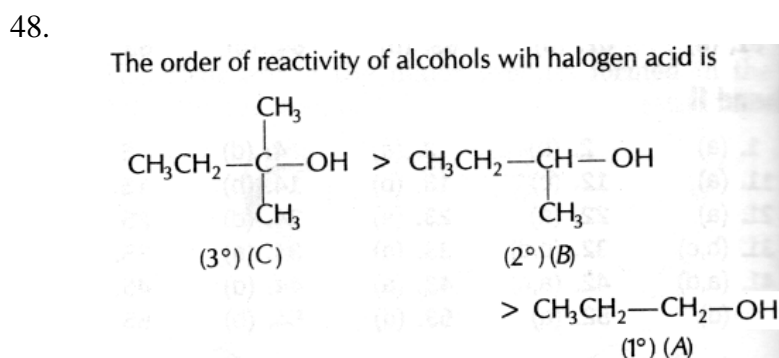
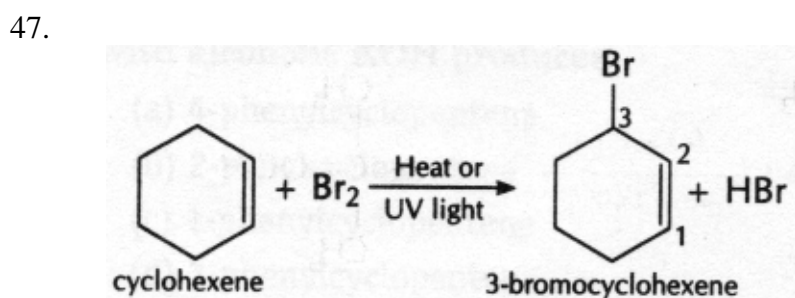
43.  $\theta(\text{in radian}) = \frac{\lambda}{d}$   
 $\therefore d = \frac{\lambda}{\theta} = \frac{6 \times 10^{-7}}{\pi/180} = 3.4 \times 10^{-5} \text{ m}$

44. The de-Broglie wavelength,  
 $\lambda = \frac{h}{\sqrt{2m_e eV}} = \frac{1.227}{\sqrt{V}} \text{ nm}$

45. As,  $\lambda = \frac{h}{\sqrt{2qVm}} \propto \frac{1}{\sqrt{qVm}}$   
 $\therefore \frac{\lambda_\alpha}{\lambda_p} = \frac{\sqrt{q_p V_p m_p}}{\sqrt{q_\alpha V_\alpha m_\alpha}} = \sqrt{\frac{1 \times 100 \times 1}{2 \times 800 \times 4}} = \frac{1}{8}$   
 $\therefore \lambda_\alpha = \frac{\lambda_p}{8} = \frac{\lambda_0}{8}$



It is an addition reaction and addition occurs according to Markownikoff's rule.



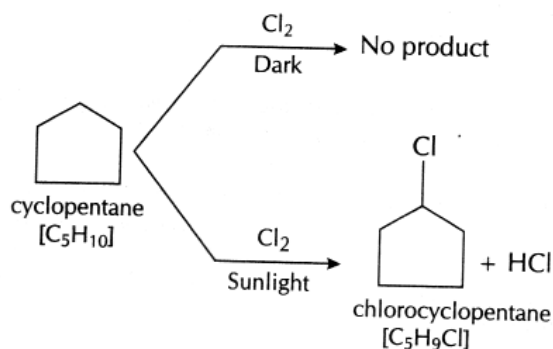


49.

Molecular formula  $C_5H_{10}$  can be either alkene or cycloalkane.

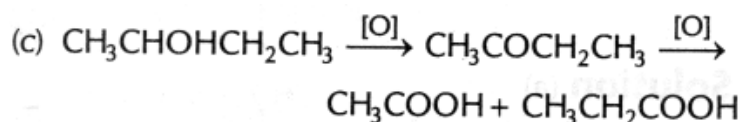
Since, the hydrocarbon does not react with chlorine in dark, it is not an alkene. So, it is a cycloalkane, i.e., cyclopentane.

Since, it forms only single monochloro derivative in bright sunlight, all the H-atoms should be identical. So, it is cyclopentane.

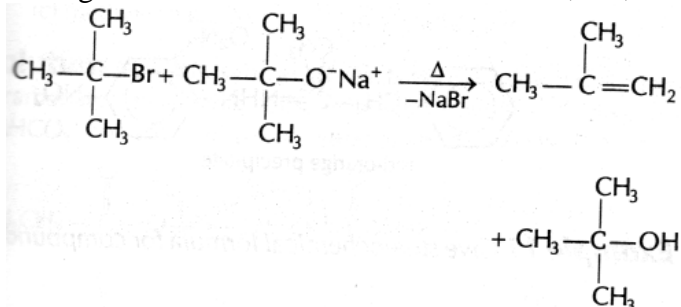


50. Aryl halides are less reactive towards nucleophile than alkyl halides due to resonance.

51.

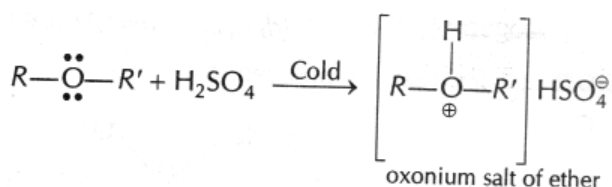


52. (a) Di-tert-butyl ether can't be made by williamson's synthesis, since tert-alkyl halides prefer to undergo elimination rather than substitution, i.e.,



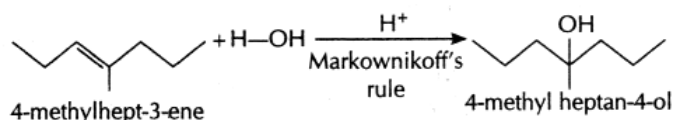
53. (c) in the presence of non-polar aprotic solvents such as  $CHCl_3, CCl_4$  etc.,  $Br_2$  reacts with phenol to give a mixture of o-and p-bromophenol.

54.

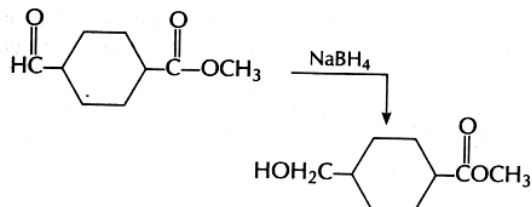


55. Secondary alcohols give turbidity within 5 min with lucas reagent.

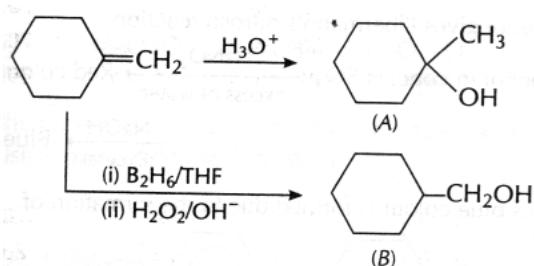
56.



57.

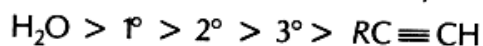


58.



59.

Alcohols are more acidic than alkynes but less acidic than water thus, the correct order of acidity is

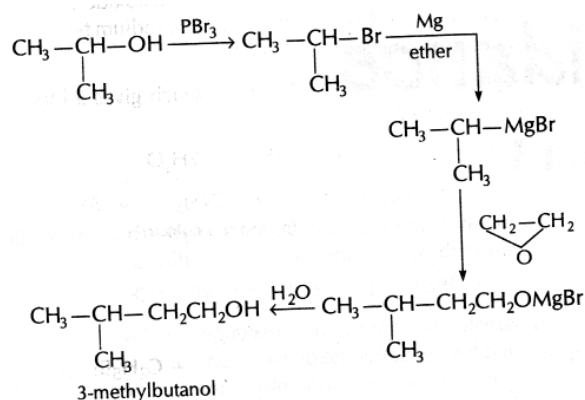


60. ( )

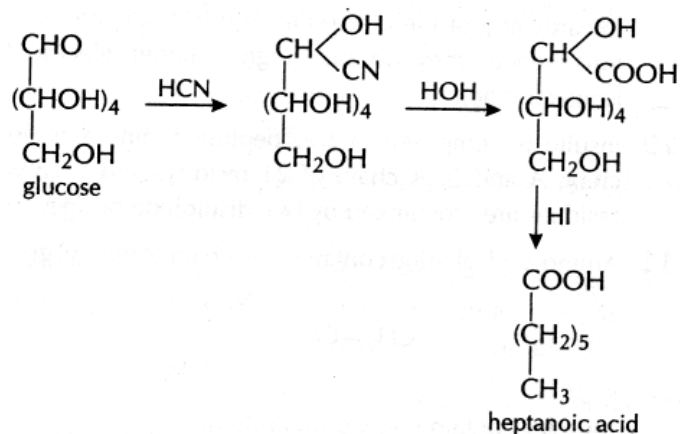
61.

The order of reactivity depends upon the stability of the carbocation formed *i.e.*,  $\text{FCH}_2\overset{+}{\text{C}}\text{HCH}_3$ ,  $\text{FCH}_2\text{CH}_2\overset{+}{\text{C}}\text{HCH}_3$ ,  $\text{CH}_3\overset{+}{\text{C}}\text{HCH}_3$  and  $\text{Ph}\overset{+}{\text{C}}\text{H}_2$ . The stability order of carbocations is  $\text{Ph}\overset{+}{\text{C}}\text{H}_2 > \text{CH}_3\overset{+}{\text{C}}\text{HCH}_3 > \text{FCH}_2\text{CH}_2\overset{+}{\text{C}}\text{HCH}_3 > \text{FCH}_2\overset{+}{\text{C}}\text{HCH}_3$ . Thus, the order of reactivity follows the order IV > III > II > I.

62.



63.



64.

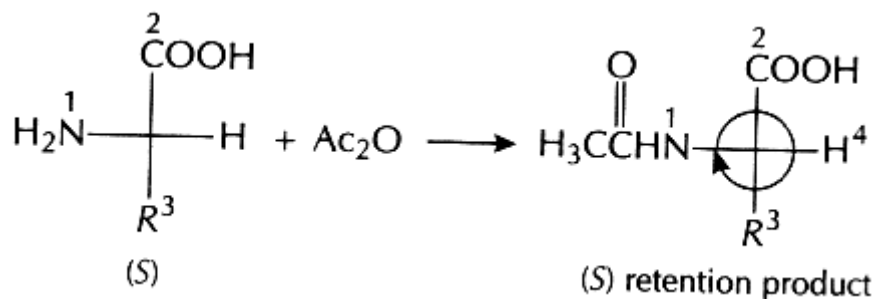
Natural glucose is dextrorotatory and thus glucose is also known as dextrose.

65.

Aldehydes and  $\alpha$ -hydroxy ketones give positive tollen's test. Glucose is a polyhydroxy aldehyde and fructose is an  $\alpha$ -hydroxy ketone.

66. ()

67.



68. ()

69. Isoelectric point is a pH at which Zwitter ions do not migrate towards any of the electrode. Amino acids are also Zwitter ions hence, they do not migrate under electric field at isoelectric point.

70. 1 g fat provide 37 kJ of energy on oxidation while 1 g carbohydrate on oxidation gives 17 kJ of energy. Hence, fat has highest calorific value.

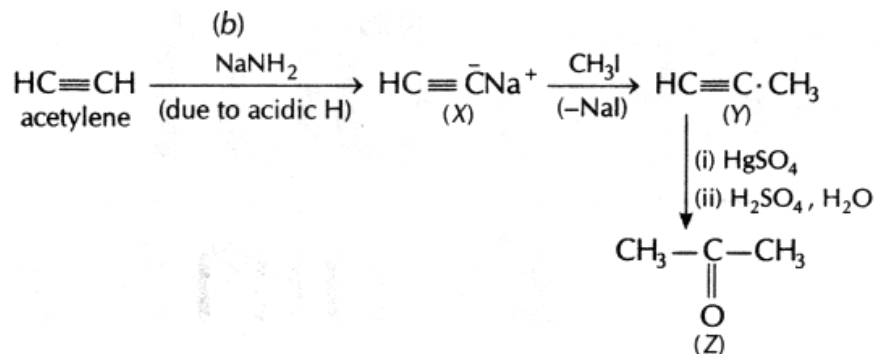
71. When glucose reacts with Br<sub>2</sub> water, gluconic acid is obtained as main product.

72. Antiseptics are applied to the living tissues such as wounds, cuts, diseased skin surfaces. These are not ingested like antibiotics.

73. ()

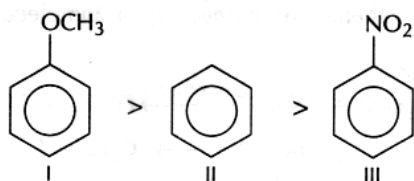
74. (d) in but-2-ene there is symmetry and in case of symmetrical alkenes anti-markownikoff's rule is not obeyed.

75.



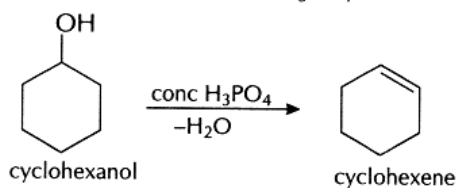
76.

(c) Activating groups like  $-\text{OCH}_3$ ,  $-\text{OH}$  etc., activates the benzene ring towards electrophilic substitution while deactivating groups like  $\text{NO}_2$ ,  $\text{COOH}$  etc., deactivates the benzene ring towards electrophilic substitution. Thus, order of reaction with electrophile (of the given compounds) is as

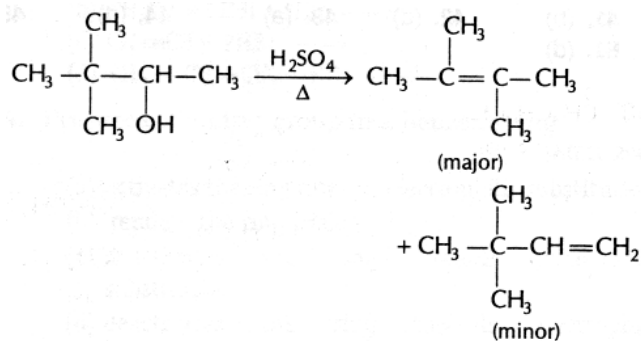


77.

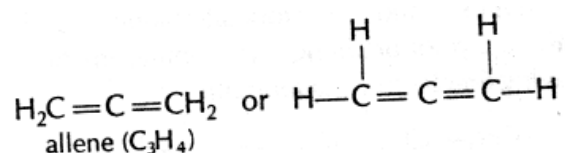
The best method to prepare cyclohexene from cyclohexanol is by using conc.  $\text{H}_3\text{PO}_4$  because among given options dehydrating agent is only conc.  $\text{H}_3\text{PO}_4$ .



78.



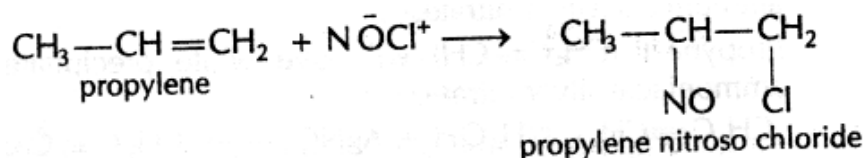
79.



It has two double and four single bonds.

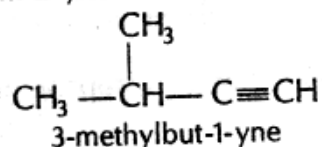
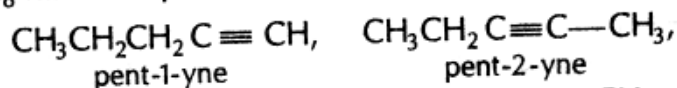
80. Conjugate dienes are more stable than the other dienes.

81.

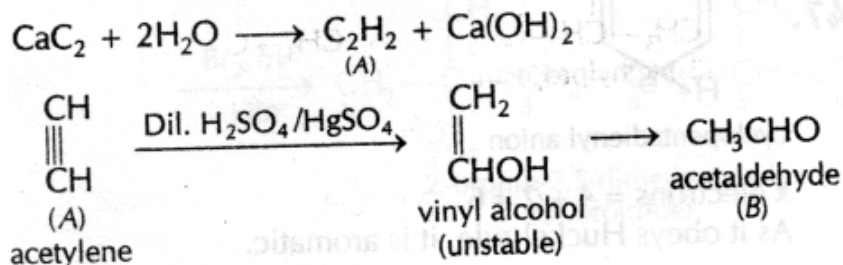


82.

$\text{C}_5\text{H}_8$  has three possible alkynes. These are

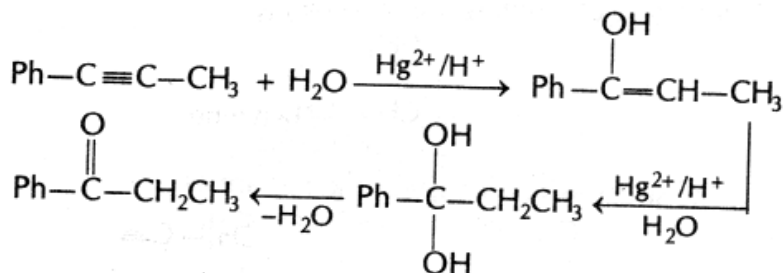


83.



84. ()

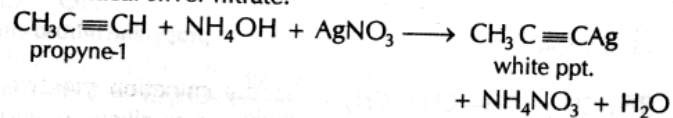
85.



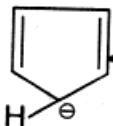
86.

$C_2H_2$  and all 1-alkynes give white precipitate with ammoniacal silver nitrate.

Propyne-1 ( $CH_3C\equiv CH$ ) will give white precipitate with ammoniacal silver nitrate.



87.

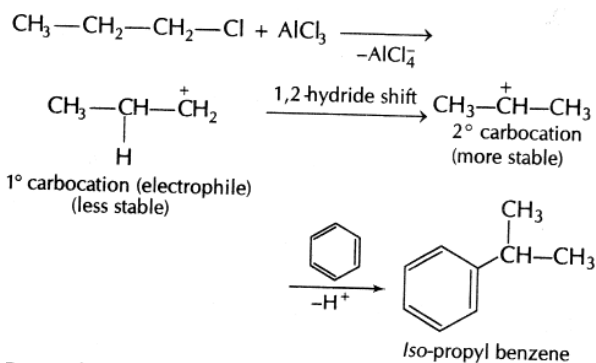


cyclopentadienyl anion

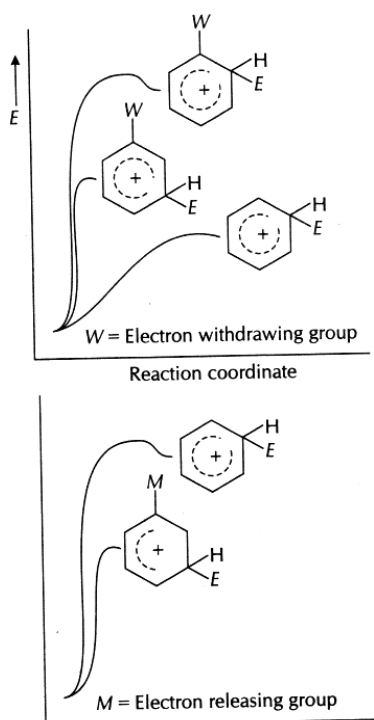
$\pi$  electrons =  $4 + 2 = 6$

As it obeys Huckel rule, it is aromatic.

88.



89.



90. ( )

Q. no.	Correct Option	Solution
91	3	NCERT XII, Chapter 9; page no. 172
92	1	NCERT XII, Chapter 9; page no. 170
93	3	NCERT XII, Chapter 9; page no. 171
94	4	NCERT XII, Chapter 9; page no. 171
95	4	NCERT XII, Chapter 9; page no. 173.
96	3	NCERT XII, Chapter 9; page no. 176.
97	3	NCERT XII, Chapter 9; page no. 174. Gamma rays and X rays are radiations
98	4	NCERT XII, Chapter 9; page no. 176
99	1	NCERT XII, Chapter 9; page no. 171
100	1	PH of tissue culture media is 5-5.8
101	2	NCERT XII, Chapter 9; page no. 173.
102	2	NCERT XII, Chapter 9; page no. 174.
103	3	NCERT XII, Chapter 9; page no. 176. Maize hybrids with twice the amount of lysine and tryptophan were released in 2000.
104	4	NCERT XII, Chapter 9; page no. 176.
105	4	NCERT XII, Chapter 9; page no. 177.
106	1	NCERT XII, Chapter 9; page no. 177. Nutrient medium for tissue culture has auxins and cytokinins. 2,4-D is auxin and BAP is a cytokinin.
107	2	NCERT XII, Chapter 9. Callus culture and suspension culture are commonly used in micropropagation. Suspension culture is the culture of cells or cell clumps in liquid medium and grows faster than callus culture.
108	4	NCERT XII, Chapter 9; page no. 175
109	1	NCERT XII, Chapter 9; page no. 177
110	4	NCERT XII, Chapter 9; page no. 171
111	2	NCERT XII, Chapter 9; page no. 177
112	3	NCERT XII, Chapter 9; page no. 177
113	4	NCERT XII, Chapter 9; page no. 177
114	1	NCERT XII, Chapter 9; page no. 177
115	2	NCERT XII, Chapter 10; page no. 179
116	4	NCERT XII, Chapter 9; page no. 177
117	4	NCERT XII, Chapter 10; page no. 182
118	4	NCERT XII, Chapter 10; page no. 181-183
119	3	NCERT XII, Chapter 10. All the terms under column I are different antibiotics.
120	1	NCERT XII, Chapter 10; page no. 183
121	3	NCERT XII, Chapter 10; page no. 183
122	1	NCERT XII, Chapter 10. The reaction occurs under anaerobic conditions.
123	4	NCERT XII, Chapter 10; page no. 184
124	1	NCERT XII, Chapter 10; page no. 184
125	1	NCERT XII, Chapter 10; page no. 185
126	1	NCERT XII, Chapter 10; page no. 184
127	4	NCERT XII, Chapter 10; page no. 183-184
128	4	NCERT XII, Chapter 10; page no. 184
129	2	NCERT XII, Chapter 10; page no. 186
130	2	NCERT XII, Chapter 10; page no. 185
131	4	NCERT XII, Chapter 10; page no. 187-188

132	1	NCERT XII, Chapter 10; page no. 188
133	1	NCERT XII, Chapter 10; page no. 183-185
134	2	NCERT XII, Chapter 10; page no. 187
135	2	NCERT XII, Chapter 10; page no. 187

136. In aminocentesis some of the amniotic fluid of the developing foetus is taken to analyse the fetal cells and dissolved substances. This procedure is used to test the presence of certain genetic disorders such as, down syndrome, haemophilia, sickle-cell anemia, etc., determine the survivability of the foetus. (Pg.58)

137. (Pg.168)

138. (Pg. 157-158)

A. Carcinoma	(ii) Breast cancer
B. Liposarcoma	(iv) Adipose tissue
C. Melanoma	(iii) Skin
D. Myeloma	(i) Bone marrow

139. Rupture of RBC result in septicaemia because of release of haematin granules in the blood resulting in characteristic chills and high fever.

140. In tubectomy, a small part of the fallopian tube is removed or tied up through a small incision in the abdomen or through vagina. (Pg.62)

141. Normal cells show a property called contact inhibition by virtue of which contact with other cells inhibits their uncontrolled growth. Cancer cells appears to have lost this property. (Pg.157)

142. AIDS is caused by the human deficiency Virus (HIV), a member of a group of viruses called retrovirus. (Pg.154)

143. *Wuchereria* (*W.bancrofti* and *W. malayi*), the filarial worms cause a slowly developing chronic inflammation of the organs in which they live for many years, usually the lymphatic vessels of the lower limbs and the disease is called elephantiasis or filariasis. 3<sup>rd</sup> stage larva is infective to man. (Pg.149)

144. Bacteria like *Streptococcus pneumonia* and *Haemophilus influenzae* are responsible for the disease pneumonia. A healthy person acquired the infection by inhaling the droplets by an infected person. (Pg.147)

145. Oral administration of small doses of either progesterone or progesterone-estrogen combinations is another contraceptive method used by the females. They are used in the form of tablets and hence are popularly called the pills. (Pg.61)

146. To improve chances of successful production of hybrids, multiple ovulation embryo transfer technology (MOET) is one such programme for herd improvement.

147. Cocaine, commonly called coke or crack is usually snorted. It has a potent stimulating action on central nervous system, producing a sense of euphoria and increased energy.



148. It is important to note that HIV/AIDS is not spread by mere touch or physical contact; it spreads only through body fluids. (Pg.155)
149. The Intra Uterine Device (IUD) (copper-T) causes a foreign body reaction in the uterus causing cellular and biochemical changes in the endometrium and uterine fluids, the changes impair the viability of the gamete and thus reduce its chance of fertilization rather the implantation. Medicated IUDs produce other local effects that may contribute to their contraceptive action. Copper seems to enhance the cellular response in the endometrium. It also affects the enzymes in the uterus. By altering the biochemical composition of cervical mucus, copper ions may affect sperm motility, capacitation and survival.
150. Smoking is associated with increased incidence of cancers of lung, urinary bladder and throat, bronchitis, emphysema, coronary heart disease, gastric ulcer etc. (Pg-160)
151. (Pg.146 to 150)

Column I	Column II
A. <i>Treponemapallidum</i>	(3) Syphilis
B. <i>Salmonella</i>	(1) Typhoid
C. <i>Bacillus anthraxis</i>	(2) Anthrax
D. <i>Vibrio</i>	(4) Cholera

152. (Pg.64)

Terms	Meanings
A. IVF	1. Invitro union of gametes
B. AI	2. Taking sperms from donor.
C. ZIFT	4. Embryo transfer done inside uterus after <i>in vitro fertilization</i>
D. GIFT	3. Gametes released in fallopian tube

153. Typhoid toxoid vaccine is active immunisation.
154. B cells proliferate to form plasma cells that secrete antibodies.
155. Test tube baby means ovum fertilized outside the mother body and then implanted in uterus for growth and development. (Pg.64)
156. Transfer of an ovum collected from a donor into the fallopian tube (GIFT- gamete intra fallopian transfer) of another female who cannot produce one.
157. Common cold infects nose and respiratory passage but not lungs. (Pg.147)
158. Atherosclerosis is caused by deposits of calcium, fat, cholesterol and fibrous tissues which makes the lumen of arteries narrower. (Pg.288(11))
159. Pills inhibit ovulation. (Pg.61)
160. Myasthenia gravis is disease of neuromuscular junction
- 161.
162. Infertility cases either due to inability of the male partner to inseminate the female or due to very low sperm counts in the ejaculates, could be corrected by artificial insemination (AI) technique. (Pg-64)

163. The most common species of bee is *Apisindica*. (Pg.169)
164. Serum globulins are antibodies. (Pg.151)
165. The antibodies produced during allergy is of IgE type. (Pg.153)
166. A cow is administered hormones, with FSH-like activity, to induce follicular maturation and super ovulation – instead of one egg, which they normally yield per cycle, they produce 6-8 eggs. The animal is either mated with an elite bull or artificially inseminated. The fertilized eggs at 8-32 cell stages, are recovered non-surgically and transferred to surrogate mothers. (Pg.168-169)
167. Nicotine increases adrenaline secretion.
168. (Pg. 156-157)
- 169.
170. The parasites multiply within mosquitoes (female *Anopheles*) to form sporozoites that are stored in their salivary glands. When these mosquitoes bite a human, the sporozoites are introduced in human body and cause malaria. (Pg.147)
171. Many fungi belonging to the genera *Microsporum*, *Trichophyton* and *Epidermophyton* are responsible for ringworms which is one of the most common infectious diseases in man. (Pg.149)
172. 'Inland fishery' refers to culturing fish in fresh water. (Pg.170)
173. The vaccines generate memory – B and T-cells that recognize the pathogen quickly on subsequent exposure and overwhelm the invaders with a massive production of antibodies. (Pg.152)
174. Oxytocin is birth hormone and vasopressin is used to conserve water. (Pg.60-61)
- 175.
176. Morphine is a very effective sedative and painkiller, and is very useful in patients who have undergone surgery. (Pg.159)
177. The chronic use of alcohol damages nervous system and liver (Cirrhosis). (Pg.162)
178. Lactational amenorrhea (absence of menstruation) method is based on the fact that ovulation and therefore the cycle do not occur during the period of intense lactation following parturition. Therefore, as long as the mother breast-feeds the child fully, chances of conception are almost nil.
179. Honeybee also produces beeswax, which finds many uses in industry, such as in the preparation of cosmetics and polishes of various kinds. (Pg.169)
180. Cytokine barriers : Virus-infected cells secrete proteins called interferons which protect non-infected cells from further viral infection. (Pg.151)