1. (c)

Sol. By using $\frac{I}{O} = \frac{f}{f-u}$

Here $O + 5\,cm$, $f = -\frac{R}{2} = -10\,cm$,

$u = -1\,m = -100\,cm$

So, $\frac{I}{+5} = \frac{-10}{-10-(-100)}$

$\Rightarrow$ I = – 0.55 cm.

2. (a)

Sol. μ V > I > B > G > Y > O > R

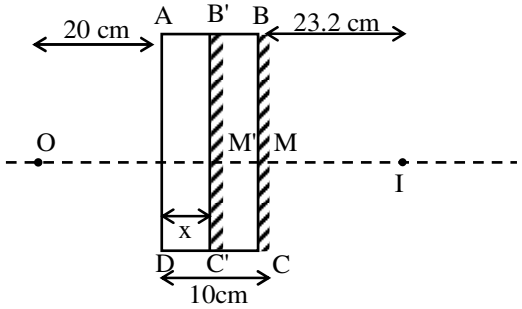
i_c V < I < B < G< Y < O < R

$\sin i_c = 1/\mu$

$\therefore$ i_c is maximum for Red.

3. (c)

Sol.



AB' = Apparent depth = x, AB = 10 cm

AB' = x = $\frac{AB}{\mu} = \frac{10\,cm}{\mu}$ ...(i)

M point shift to M'

by reflection law

OM' = M'I

20 +x = (10 – x) + 23.2

$20 + \frac{10}{\mu} = 33.2 - \frac{10}{\mu}$, $\frac{20}{\mu} = 13.2$

$\mu = \frac{200}{132} = \frac{50}{33} = 1.51$

4. (d)

Sol. $\mu = \frac{1}{\sin C} \Rightarrow \mu \propto \frac{1}{C}$

$\because \mu_V > \mu_R \Rightarrow C_V < C_R$

5. (a)

Sol. Conceptual.

6. (b)

Sol. Cot A/2 = $\frac{\sin\left(\frac{A+\delta_m}{2}\right)}{\sin A/2}$

$\frac{\cos A/2}{\sin A/2} = \frac{\sin\left(\frac{A+\delta_m}{2}\right)}{\sin A/2}$

$\sin(90 - A/2) = \sin\left(\frac{A+\delta_m}{2}\right)$

so $\delta_m = 180^0 - 2A$

7. (b)

Sol. $i = \frac{\delta_m + A}{2} = \frac{30°+60°}{2} = 45^0$

8. (c)

Sol. $\mu = 1.5$, $\delta_m = A$, Given $\cos 41^0 = 0.75$

$\mu = \frac{\sin\left(\frac{A+\delta_m}{2}\right)}{\sin\frac{A}{2}} = \frac{\sin\left(\frac{A+A}{2}\right)}{\sin\frac{A}{2}}$

$= \frac{2\sin\frac{A}{2}\cos\frac{A}{2}}{\sin\frac{A}{2}}$

$\mu = 2\cos\frac{A}{2}$

$\frac{3}{2} = 2\cos\frac{A}{2} \Rightarrow \cos\frac{A}{2} = 0.75 = \cos 41^0$

$\frac{A}{2} = 41^0 \therefore \boxed{A = 82^o}$

9. (a)

Sol. $\delta_{net} = \delta + \delta' = 0$

$\delta' = -\delta$

$(\mu'_y - 1)\, A' = -(\mu_y - 1)\, A \Rightarrow \boxed{\frac{A'}{A} = -\frac{(\mu_y - 1)}{(\mu'_y - 1)}}$

10. (b)

Sol. $A = 60^0; i = 55^0; e = 46^0$

$\therefore i + e = A + \delta$

$55^0 + 46^0 = 60^0 + \delta$

$\Rightarrow \quad \delta = 41^0 \quad \delta_{min} < \delta$

11. (c)

Sol. By using $\frac{1}{f} = \frac{1}{v} + \frac{1}{u} \Rightarrow \frac{1}{+f} = \frac{1}{v} + \frac{1}{(-f)} \Rightarrow v = \frac{f}{2}$

12. (a)

Sol. No change in focal length, because f depends only upon radius of curvature R.

13. (c)

Sol. $\mu \propto \frac{1}{\lambda} \Rightarrow \frac{\mu_1}{\mu_2} = \frac{\lambda_2}{\lambda_1} \Rightarrow \frac{1}{4/3} = \frac{\lambda_2}{4200}$

$\Rightarrow \quad \lambda_2 = 3150\ \mathring{A}$

14. (b)

Sol. From figure $r = 30^o$

$\therefore \quad \mu = \frac{\sin i}{\sin r} = \frac{\sin 60^o}{\sin 30^o} = \sqrt{3}$

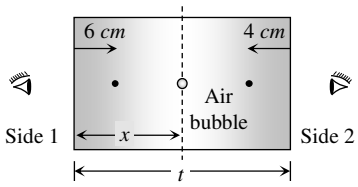
15. (c)

Sol. Let thickness of slab be t and distance of air bubble from one side is x

When viewed from side (1) : $1.5 = \frac{x}{6} \Rightarrow x = 9cm$

When viewed from side (2)

: $1.5 = \frac{(t-x)}{4} \Rightarrow 1.5 = \frac{(t-9)}{4} \Rightarrow t = 15\,cm$



16. (a)

Sol. By using $\frac{1}{F}=\frac{1}{f_1}+\frac{1}{f_2} \Rightarrow \frac{1}{F}=\frac{1}{+40}+\frac{1}{-25}$

$\Rightarrow F=-\frac{200}{3}cm$,

hence $P=\frac{100}{f(cm)}=\frac{100}{-200/3}=-1.5\ D$

17. (b)

Sol. By using

$f=\frac{R}{2(\mu-1)} \Rightarrow f=\frac{40}{2(1.65-1)}=30.7\,cm\approx 31\,cm.$

18. (a)

Sol. In concave lens, image is always formed on the same side of the object. Hence the given lens is a convex lens for which u = – 25 cm, v = 75 cm.

By using $\frac{1}{f}=\frac{1}{v}-\frac{1}{u} \Rightarrow \frac{1}{f}=\frac{1}{(+75)}-\frac{1}{(-25)}$

$\Rightarrow$ f = + 18.75 cm.

19. (c)

Sol. By using $O=\sqrt{I_1 I_2} \Rightarrow O=\sqrt{8\times 2}=4\,cm$

20. (a)

Sol. By using

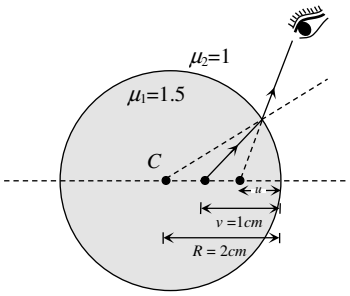
$\frac{\mu_2}{v}-\frac{\mu_1}{u}=\frac{\mu_2-\mu_1}{R}$

where u = ? , v = – 1 cm, $\mu_1=1.5$, $\mu_2=1$,

R = – 2 cm.

$\frac{1}{-1}-\frac{1.5}{u}=\frac{1-1.5}{(-2)}$

$\Rightarrow u=-\frac{6}{5}=-1.2\,cm.$



21. (d)

Sol. $\mu = \dfrac{\sin i}{\sin\dfrac{A}{2}} \Rightarrow \sqrt{2} = \dfrac{\sin 45}{\sin\dfrac{A}{2}} \Rightarrow \sin\dfrac{A}{2} = \dfrac{\dfrac{1}{\sqrt{2}}}{\sqrt{2}} = \dfrac{1}{2} \Rightarrow \dfrac{A}{2} = 30^o \Rightarrow A = 60^o$

22. (d)

Sol. Given that $A = 60^o$ and $i = e = \dfrac{3}{4}A = \dfrac{3}{4}\times 60 = 45^o$

By using $i + e = A + \delta \Rightarrow 45 + 45 = 60 + \delta \Rightarrow \delta = 30^o$

23. (a)

Sol. Given that $m_\infty = 8$ and $L_\infty = 54$

By using $|m_\infty| = \dfrac{f_o}{f_e}$ and $L_\infty = f_o + f_e$ we get $f_o = 6\ cm$

and $f_e = 48\ cm$.

24. (c)

Sol. By using $\dfrac{\beta}{\alpha} = \dfrac{f_o}{f_e} \Rightarrow \dfrac{\beta}{20} = \dfrac{60}{5} \Rightarrow \beta = 24°$

25. (a)

Sol. Applying Snell's Law for refraction,

$$\frac{\text{Sin i}}{\text{Sin r}'} = \frac{n_2}{n_1} \qquad \ldots(1)$$

From the given condition, $r + r' = 90$

$\Rightarrow \text{Sin } r' = \text{Cos r}$ $\ldots(2)$

Solution of (1) and (2) yields, $\dfrac{\text{Sin i}}{\text{Cos r}} = \dfrac{n_2}{n_1}$ $\ldots(3)$

Since, at the time of total internal reflection

According to the Law for refraction;

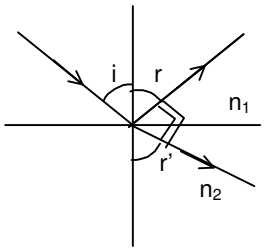
$i = r$ …(4)

Using (3) and (4) we obtain

$$\frac{\text{Sin } i}{\text{Cos } i} = \frac{n_2}{n_1}$$

$$\Rightarrow \tan i = \frac{n_2}{n_1} \quad \ldots.(5)$$

$\text{Sin } \theta_c = \frac{n_2}{n_1}$, Using (5) we obtain $\theta_c = \sin^{-1}(\tan r)$



26. (b)

Sol. $m = \frac{f}{f-u} \Rightarrow -4 = \frac{f}{f-(-40)}$

$\therefore f = -4f - 160, \quad f = -32$ cm

$\therefore R = 2f = -64$ cm

27. (b)

Sol. $-\frac{1}{15} = -\frac{1}{2u} + \frac{1}{u} \Rightarrow u = -7.5$m

28. (c)

Sol. $\frac{1}{10} = \frac{1}{v} - \frac{1}{20} \Rightarrow v = \frac{20}{3}$ virtual image

29. (a)

Sol. $m = \frac{f}{f-u} \Rightarrow \frac{1}{4} = \frac{1}{f-(-0.5)} \Rightarrow f = 0.17$ m

30. (b)

Sol. $\frac{1}{v} + \frac{1}{(-10)} = \frac{1}{-30}$

$v = 15$ cm, $m = 1.5$

31. (b)

Sol. $\frac{f}{f-x} = \frac{3}{1} \Rightarrow \frac{f}{f-(-4)} = \frac{3}{1} \Rightarrow f = -6$

R = – 12 cm

32. (b)

Sol. m = –3 , u = –20 cm ; f = ?

$\therefore m = \frac{f}{f-u} \Rightarrow -3 = \frac{f}{f-(-20)}$

$\therefore f = -3f - 60$

$\therefore f = -15$ cm.

33. (d)

Sol. $f = \frac{-30}{2} = -15$ cm, u = –10 cm

$m = \frac{f}{f-u} = \frac{hI}{h_0}$

$\frac{-15}{-15-(-10)} = \frac{hI}{2.5}$

$\therefore hI = 7.5$ cm

34. (c)

Sol. Real when object is any where between focus and infinity. Virtual when object is between pole and focus

35. (b)

Sol. $\frac{1}{f} = \left(\frac{\mu_2}{\mu_1} - 1\right)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$

$\frac{1}{+20} = (1.5 - 1)\left(\frac{1}{R} - \frac{1}{\infty}\right)$

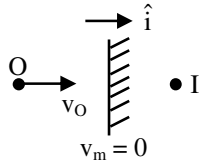
$\therefore$ R = 10 cm

36. (c)

Sol. $m = \frac{f}{f-u} = \frac{-f}{-f+\frac{3f}{2}} = -2$

37. (c)

Sol.



$\vec{v}_O = 6\hat{i}$ m/s, $\vec{v}_I = 2\vec{v}_m - \vec{v}_O$, $\vec{v}_I = -6\,\hat{i}$ m/s

Velocity of image w.r.t. observer = $\vec{v}_{IO}$

$= \vec{v}_I - \vec{v}_O = -6\hat{i} - 6\hat{i} = -12\,\hat{i}$

= 12 m/s away from mirror

38. (a)

Sol. When the slab is placed on a flat surface the real depth and apparent depth can be measured directly by travelling microscope.

39. (a)

Sol. u = – 15 cm , R = + 30 cm

$\mu = 1.5 = \frac{3}{2}$, $\mu_1 = 1$

$$\frac{\mu_2}{v} - \frac{\mu_1}{u} = \frac{\mu_2 - \mu_1}{R}$$

$$\frac{3}{2v} - \frac{1}{-15} = \frac{3/2 - 1}{+30}$$

$$\frac{3}{2v} = \frac{1}{60} - \frac{4}{60} = \frac{3}{2v} = \frac{-3}{60}$$

$\Rightarrow$ $\boxed{v = -30}$ left side

40. (d)

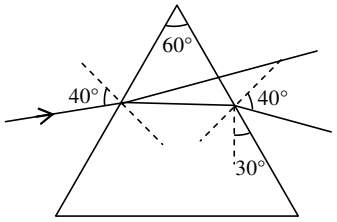
Sol. According to Cauchy's formula μ depends on wavelength also.

41. (b)

Sol. Conceptual.

42. (c)

Sol.



At δ_{min}

$i = e$

$\delta_{min} = i + e - A$

$= 40 + 40 - 60$

$= 20^0$

43. (c)

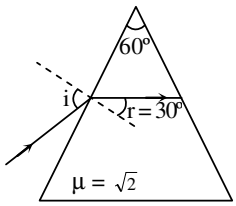
Sol. Total internal reflection occurs at the second surface.

44. (a)

Sol. $\omega = \frac{\delta_V - \delta_R}{\delta_Y} = \frac{39.2° - 38.4°}{38.7°} = 0.0206$

45. (b)

Sol.



$r = \frac{A}{2} = 30^0$

$\sin i = \sqrt{2} \sin 30^0$

$\therefore i = 45^0$

46. (b)

Sol.

$\theta = (\mu_v - \mu_R) A$

$= (1.54 - 1.52) \times 10$

$= .02 \times 10 = 0.2$

47. (a)

Sol. Couchy's equation

$n = A + \frac{B}{\lambda^2} + \frac{C}{\lambda^4} = A + B\lambda^{-2} + C\lambda^{-4}$

option (A) is correct

48. (a)

Sol. $\mu = \frac{\sin\left(\frac{A+\delta m}{2}\right)}{\sin A/2} = \frac{\sin 45^\circ}{\sin 30^\circ} = \sqrt{2} = 1.41$

49. (a)

Sol. Dispersive power depends on prism material, not on prism angle

50. (b)

Sol. In air

$\frac{1}{F} = (2-1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$ ……(i)

In liquid

$\frac{1}{F'} = \left(\frac{2}{4/3} - 1\right)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$

$\therefore \frac{1}{F'} = \left(\frac{3}{2} - 1\right)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$…..(ii)

(i)/(ii)

$$\frac{\frac{1}{F}}{\frac{1}{F'}} = \frac{(2-1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)}{\left(\frac{3}{2} - 1\right)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)}$$

$\therefore \frac{F'}{F} = 2$

$\therefore F' = 2F$

SECTION-A

51. (d) Glycogen is a polymer of glucose found in lever, brain and muscles of animals.

52. (a) *cis*-polyisoprene is not a semisynthetic polymer whereas other are semisynthetic polymers

53. (b) Polyacrylonitrile is used as a substitute for wool in making commercial fibres as orlon or acrilan

54. (b) Low density polythene: It is obtained by the polymerisation of ethane under high pressure of 1000 to 2000 atmosphere at a temperature of 350 K to 570 K in the presence of traces of dioxygen or a peroxide initiator (catalyst). They are flexible in nature.

55. (a)Factual

56. (d) **Nylon-6:** It is obtained by heating caprolactum with water at a high temperature.

57. (a)Factual

58. (c) The monomers of Buna-S are styrene and butadiene

59. (a)Factual

60. (c)It is a Condensation Polymer (or) Step Growth Polymer

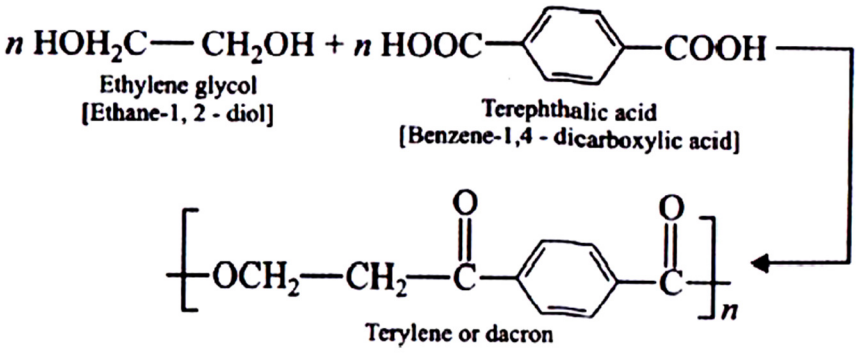
61. (a)Factual

62. (b)It is a Co-Polymer Formed by different Monomer Units

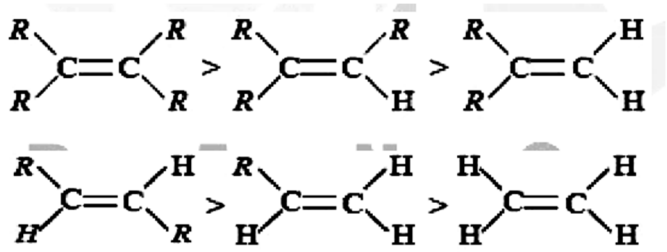
63. (c)Factual

64. (c)Factual

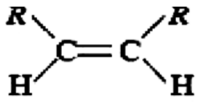
65. (d)



66. (a) The relative rates of hydrogenation decrease with the increase of steric hindrance. In order of stability of alkene, most stable the alkene slowly it gives the product

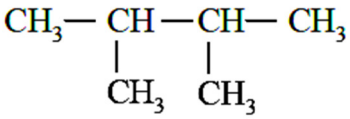


Hence alkene which will react faster with $H_2$is that which is most unstable.



$$+H_2 / Pt \xrightarrow{fast} R-CH_2-CH_2-R$$

67. (b)Factual
68. (a)Factual
69. (a)Factual
70. (b)Factual
71. (b) nylon-2-nylon-6 is a biodegradable polymer of polyamide class
72. (d)Sulphur element is used to vulcanize rubber
73. (d)Factual
74. (c)Factual
75. (a) Cellulose following is a biodegradable polymer
76. (b) Glyptal is a polymer of ethylene glycol and phthalic acid
77. (d) The weakest interparticle forces are present in elastomers
78. (a)Factual
79. (c) AlC KOH brings about hydro halogenation.
80. (d) (A, B, C) are isomers of pentane but not D)
81. (b) Toluene due to $\cdot CH_3$ group has more electron density and is more readily Sulphonoted.
82. (b)



83. (c) The difference between staggered and Eclipsed Confirmation about 12 kJ / mol

84. (a) 3 : 2

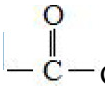
(1S sp^2 hybrid orbitals and 6p + 6s orbitals)

85. (a) Among the halogens, fluorine being most electronegative is lightly reactive and reactivity deceases on moving down the group. Thus, the correct order ic $I_2 < Br_2 < Cl_2 < F_2$

SECTION-B

86. (b) As the size of halogen atom increases R X bond becomes weak due to This R · X bond break's easily Thus Reactivity of R x increases

87. (d)

(a)  Clemmensen's reagent ZnHg / HCl is converted to · CH_2 ·

(b) By wurtz reaction except methane Remaining Alkanes are prepared

(c) $CH_2 = CH_2$ by $LiAlH_4$ to CH_3CH_3 Ethane

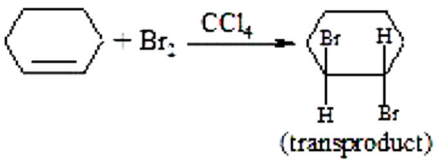
(d) methyl Iodide by using a zinc – copper couples to CH_4.

88 . (a) Conceptual

89. (a) All H - atoms in neo pentane are equivalent thus, it will monochloroproduct

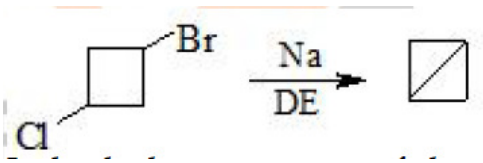
90. (a) CNG consists of 95% CH_4

91. (b)



(transproduct)

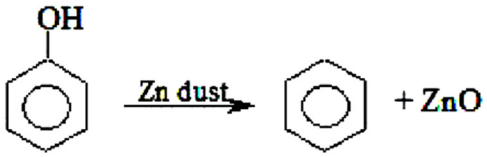
92. (d)



93. (c) In both the cases, one of the steps is Endothermic. i. e the reaction of HCl with carbon radical in case of HCl and Addition of iodine radical to double bond in case of HI

94. (c) Hydrogenation

95. (a)

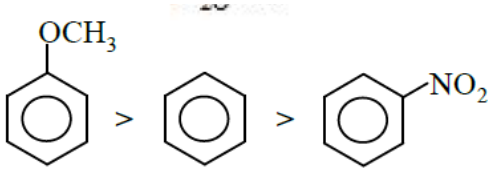


96. (c) 2 butane is symmetrical alkene

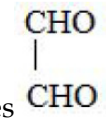
$$CH_3 - CH = H - CH_3 \xrightarrow[zn/H_2O]{O_3} 2\ CH_3CHO$$

Molar mass of CH_3CHO is 44 u

97. (c)



98. (c) Ozonolysis of CH ≡CH gives



99. (d)

$$C_2H_2 \xrightarrow{HCl} C_2H_5Cl \xrightarrow[-HCl]{\text{Alc KOH}} C_2H_2$$

100. (d) As branching ↑ses surface area decreases

Boiling point decreases

BOTANY	
Q. NO.	[ANS]
101	B
102	B
103	C
104	C
105	D
106	B
107	C
108	D
109	C
110	A
111	D
112	A
113	C
114	B
115	C
116	D
117	B
118	B
119	A
120	D
121	C
122	C
123	B
124	D
125	C
126	A
127	A
128	A
129	B
130	C
131	A
132	D
133	B

ZOOLOGY	
Q. NO.	[ANS]
151	A
152	D
153	D
154	A
155	B
156	D
157	B
158	B
159	C
160	B
161	B
162	B
163	D
164	B
165	B
166	A
167	D
168	C
169	D
170	C
171	A
172	D
173	C
174	C
175	A
176	D
177	B
178	C
179	D
180	C
181	C
182	B
183	C

EDT-16 (NEET) SOLUTIONS

BOTANY	
134	A
135	C
136	A
137	C
138	D
139	C
140	C
141	A
142	B
143	C
144	B
145	C
146	B
147	A
148	A
149	C
150	C

ZOOLOGY	
184	D
185	C
186	B
187	D
188	B
189	B
190	B
191	A
192	C
193	C
194	A
195	C
196	B
197	C
198	D
199	C
200	D