

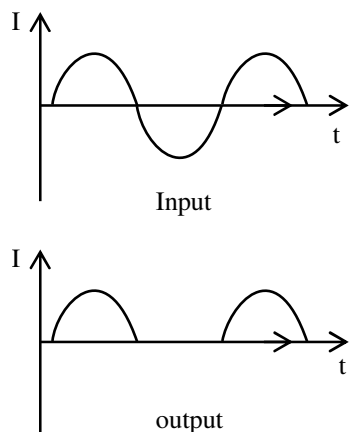


1. (a)

Sol. $E = \frac{V}{d} = \frac{0.50}{5 \times 10^{-7}} = 1 \times 10^6 \text{ V/m.}$

2. (c)

Sol. The diode will be forward biased in one half cycle and will conduct where as it will be reverse biased in negative half cycle and will not conduct.



3. (a)

Sol. $\alpha = \frac{I_c}{I_e} = \frac{I_c}{I_c + I_b} = 0.985$

$I_c = 0.985 (I_c + I_b)$

$I_c = 0.985 I_c + 0.985 I_b$

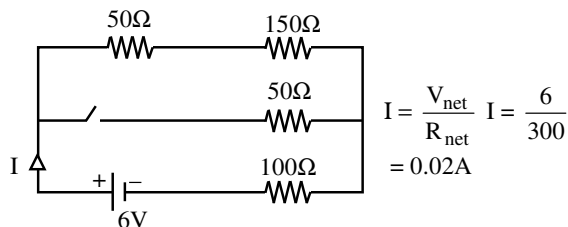
$0.985 I_b = 0.015 I_c = 0.015 \times 2 \text{ mA}$

$I_b = \frac{0.015 \times 2}{0.985} = 0.03 \text{ mA}$

$I_b \approx 0.03 \text{ mA}$

4. (b)

Sol. $D_1 \rightarrow \text{F.B.}, D_2 \rightarrow \text{R.B}$



5. (a)

Sol. From chemistry of semiconductors

6. (a)

Sol. $\alpha = \frac{i_c}{i_E}$

$i_c = \alpha i_E = 0.96 \times 7.2 \text{ mA}$

7. (c)

Sol. (a) $Z = (\overline{P+Q})$

P	Q	Z
0	0	0
0	1	0

(b) $Z = (\overline{P.Q})$

P	Q	Z
0	0	1
0	1	0

(c) $Z = (\overline{\overline{Q.(P+Q)}})$

P	Q	Z
0	0	0
0	1	1
1	0	1
1	1	1

(d) $Z = (\overline{P.Q})$

P	Q	Z
0	0	0
0	1	0
1	0	0

8. (a)

Sol. $\Delta i_c = \beta \Delta i_B = 80 \times 250 \mu\text{A}$

9. (a)

Sol. E – B junction is forward bias and

C – B junction is reversed bias.

10. (a)

Sol. p-side at higher potential and n-side at lower potential.

11. (a)

Sol. Upper diode is in forward bias,

So, $i = V/R = 2\text{V}/20\Omega = 0.1 \text{ A}$

12. (b)

Sol. Majority charge carrier in p-type is hole.



13. (c)

Sol. Depletion layer consists of immobile ions.

14. (b)

Sol. Theory

15. (b)

Sol. In forward bias, current is in milliamperes.

16. (a)

Sol. Diode is in reverse bias.

17. (c)

Sol. Zener diode works only in reverse bias.

18. (d)

Sol. Rectifier is used to convert AC into DC.

19. (a)

Sol. Emitter is highly doped than collector and base is least doped.

20. (b)

Sol. $\Delta I_c = \beta \Delta I_b = 0.8 \times 6 \text{ mA} = 4.8 \text{ mA}$

21. (c)

Sol. n-type semi-conductor is neutral, net charge is zero.

22. (d)

Sol. $E = \frac{hc}{\lambda}$

$$\lambda = \frac{19.8 \times 10^{-26}}{1.1 \times 1.6 \times 10^{-19}} = 11284 \text{ \AA}$$

23. (d)

Sol. $E_{in} = \frac{\Delta V_b}{d} = \frac{0.6}{10^{-6}} = 6 \times 10^5 \text{ V/m}$

24. (b)

Sol. 2,4,5 \rightarrow F.B. ,1,3 \rightarrow R.B.

25. (b)

Sol. Diffusion current always flows p to n side.

26. (a)

Sol. No. of e^- s $>$ No. of holes

So it is n type

27. (c)

Sol. α and β both are amplification factors

28. (d)

Sol. From basic knowledge, I_2 is least

29. (c)

Sol. For reverse bias P of diode should be at lower potential

30. (c)

Sol. Here $(A + B). C = Y$

Output is available if A & C are available.

31. (c)

Sol. In depletion zone, internal electric field is directed from n to P side which opposes diffusion of majority charge carriers

32. (c)

Sol. At absolute zero, Si acts as an insulator due to the absence of free electrons in the conduction band.

33. (c)

Sol. Adding fifth group element to germanium makes it an n-type semiconductor. Antimony is a fifth group element and so germanium becomes n-type semiconductor

34. (c)

Sol. Holes are minority carriers and pentavalent atoms are the dopants.

35. (c)

Sol. In an unbiased p-n junction, the diffusion of charge carriers across the junction takes place from higher concentration to lower concentration, thus option (c) is correct

36. (b)

Sol. In p-n junction, the diffusion of majority carriers takes place when junction is forward biased and drifting of minority carriers takes place across the junction, when it is reverse biased.



37. (b)

Sol. Potential barrier developed in a junction diode opposes the majority carriers only.

38. (c)

Sol. The depletion region created at the junction is devoid of free charge carriers.

39. (b)

Sol. When $V_A < V_B$, the diode gets reverse biased and offers infinite resistance. No current flows through the upper branch

$$\therefore R = 20\Omega$$

40. (c)

Sol. Since the diode is reversed biased, only drift current exists in circuit which is $20\mu A$

Potential drop across 15Ω resistor

$$= 15\Omega \times 20\mu A$$

$$= 300\mu V = 0.0003V$$

Potential difference across the diode

$$= 4 - 0.0003 = 3.99 = 4V$$

41. (c)

Sol. p-n junction is reverse biased when p side is at a lower potential than n side. It is for the circuit (c).

42. (a)

Sol. The p-n junction diode is forward biased when p is at high potential with respect to n. Hence option (a) is correct.

43. (c)

Sol. 50 Hz is the dc output of half wave and 100 Hz in dc output of full wave rectifier

44. (b)

Sol. As the output voltage obtained in a half wave rectifier circuit has a single variation in one cycle of ac voltage, hence the fundamental frequency in the ripple of output voltage would be $=50$ Hz.

45. (b)

Sol. Here, $I_C = 80\%$ of $I_E = \frac{80}{100} I_E$

$$\text{Or } I_E = \frac{I_C}{0.8} = \frac{10}{0.8} = 12.5mA$$

$$I_B = I_E - I_C = 12.5 - 10 = 2.5mA$$

46. (c)

Sol. In a bipolar junction transistor, emitter is heavily doped, base is lightly doped and collector is moderately doped

47. (a)

Sol. Current gain, $\beta = \frac{I_C}{I_B}$

For common emitter configuration

$$I_E = I_C$$

$$\therefore I_C = 7mA$$

$$\therefore I_B = \frac{I_C}{\beta} = \frac{7 \times 10^{-3} A}{69} = 0.1mA$$

48. (b)

Sol. The change in emitter current is

$$\Delta I_E = \Delta I_B + \Delta I_C$$

$$= 50 \times 10^{-6} + 1 \times 10^{-3}$$

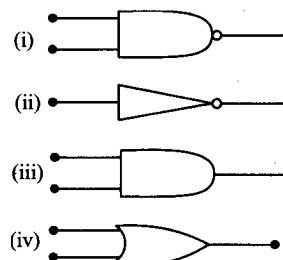
$$1050 \times 10^{-6} A = 1050\mu A$$

49. (a)

Sol. NAND

50. (b)

Sol.



OR gate, NOT gate and NAND gates are (iv), (ii) and (i) respectively.



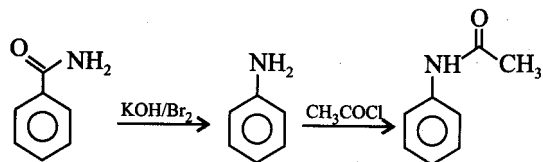
SECTION-A

51. (b)

Sol. $-\text{NO}_2$ group is a meta orienting group

52. (b)

Sol. :



53. (d)

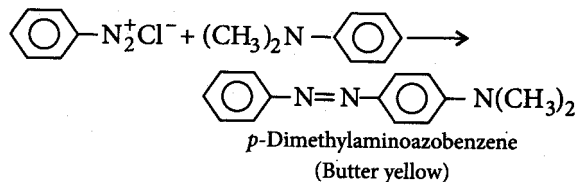
Sol. : All of these

54. (b)

Sol. : Benzenediazonium chloride is very unstable and explodes on storage.

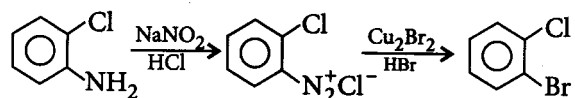
55. (b)

Sol. :



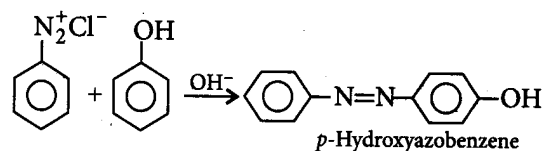
56. (c)

Sol. :



57. (a)

Sol. :



This reaction is called coupling reaction

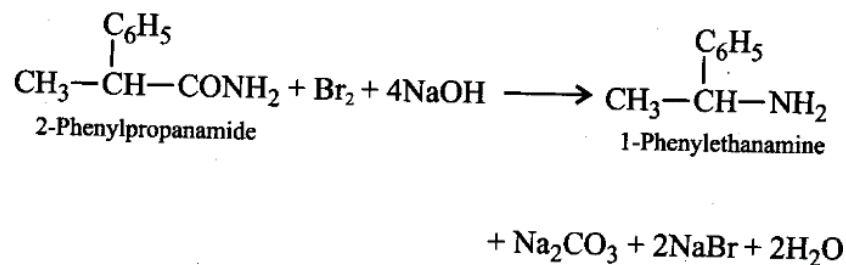


58. (c)

Sol. : In aqueous medium 2° amine $(\text{CH}_3)_2\text{NH}$ is more basic than 1° amine (CH_3NH_2) . Due to $-I$ effect of $-\text{CN}$ group, NCCH_2NH_2 is less basic than CH_3NH_2 and due to delocalisation of lone pair of electrons of N atom in benzene ring $\text{C}_6\text{H}_5\text{NHCH}_3$ is less basic than CH_3NH_2 and more basic than $\text{NC}-\text{CH}_2\text{NH}_2$. Thus the strongest base in aqueous medium is $(\text{CH}_3)_2\text{NH}$

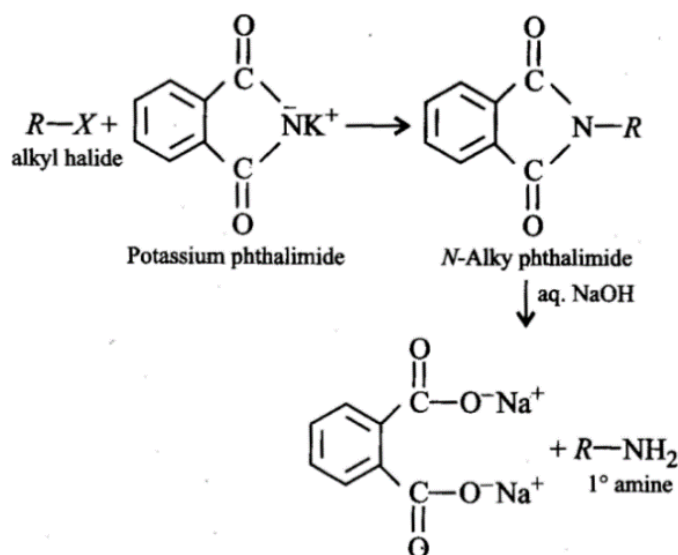
59. (b)

Sol. : By Hofmann bromamide degradation reaction the amine formed contains one carbon less than that present in the amide



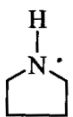
60. (b)

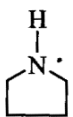
Sol. :





61. (d)



Sol. :  is the strongest bronsted base as there is no delocalization of lone pair of electrons of N atom which is possible in aniline and in pyrrole.

62. (a)

Sol. : NH_3 is more basic than H_2O therefore NH_2^- (Conjugate base of weak acid NH_3) is a stronger base than OH^- thus decreasing order of basic strength is $\text{NH}_2^- > \text{OH}^- > \text{NH}_3 > \text{H}_2\text{O}$

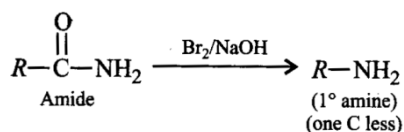
63. (b)

Sol. : The order of boiling points of isomeric amines is 1° amines $>$ 2° amines $>$ 3° amines

Because of absence of H-atom available for hydrogen bonding, 3° amines do not have intermolecular association. Intermolecular association is more in 1° amines than in 2° amines as there are two H-atoms available for H-bonding. hydrocarbons are almost non-polar molecules and possess weak van der Waals forces and hence has lowest boiling point i.e. most volatile.

64. (d)

Sol. :

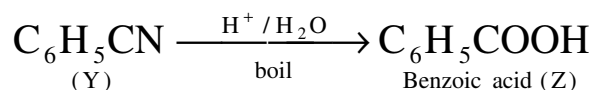
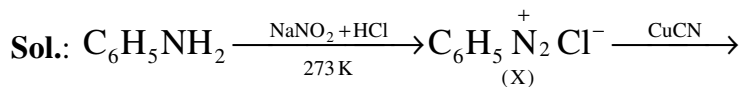


All other reaction give same number of C atoms in the chain of amines as in the reactants.

65. (c)

Sol. : Primary alcohols, carbylamines, more

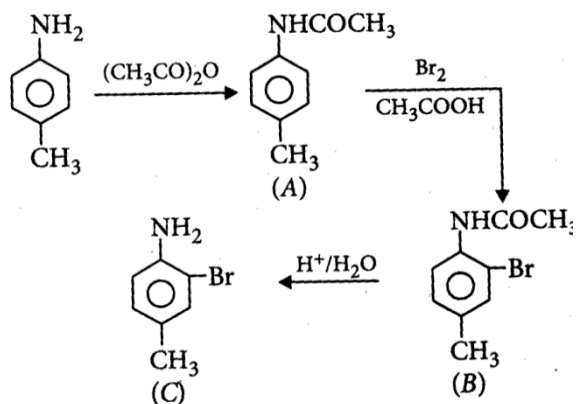
66. (c)





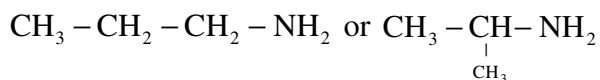
67. (c)

Sol. :

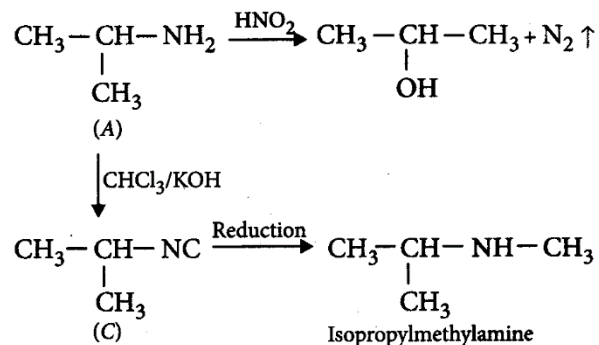


68. (a)

Sol. : As (A) gives alcohol on treatment with nitrous acid thus it should be primary amine. $\text{C}_3\text{H}_9\text{N}$ has two possible structure with $-\text{NH}_2$ group.

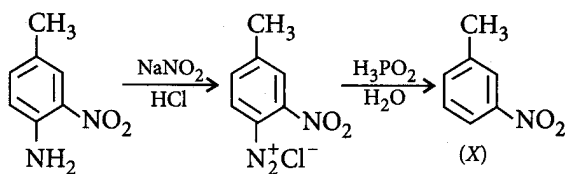


As it gives isopropylmethyl amine thus it should be isopropyl amine non n-propylamine



69. (a)

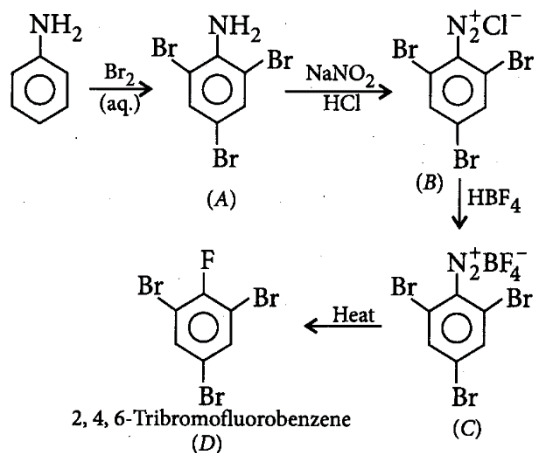
Sol. :



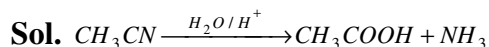


70. (a)

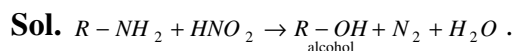
Sol. :



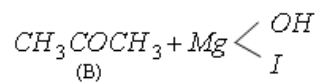
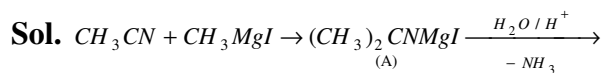
71. (a)



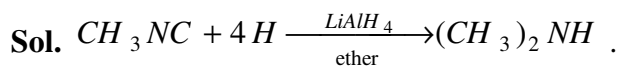
72. (b)



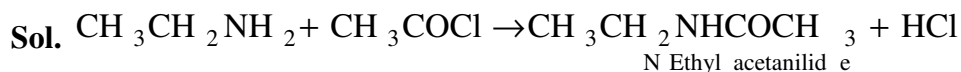
73. (b)



74. (c)



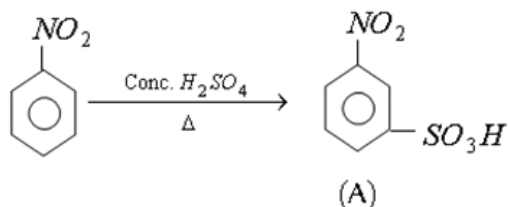
75. (a)





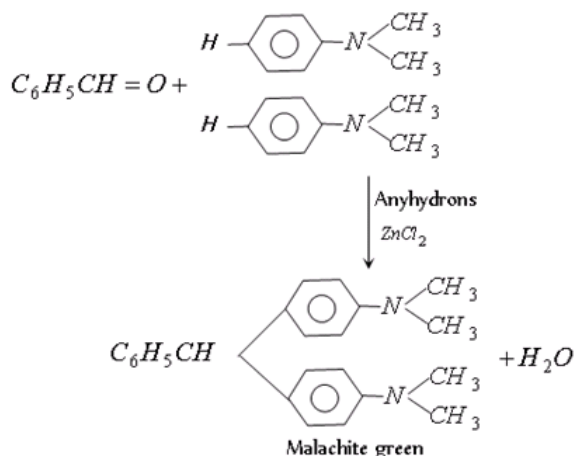
76. (b)

Sol.



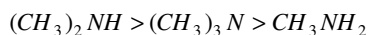
77. (c)

Sol.



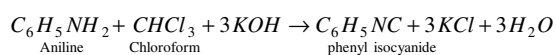
78. (a)

Sol. Basicity of amines increase with increase in number of $-CH_3$ groups (or any group which cause +I effect), due to increase in electron density on N atom. As a rule, the basicity of t-amine should be more than that of s-amine, but actually it is found to be lesser than s-amines. This is due to steric hindrance of bulkier alkyl groups, which decreases the availability of lone pair of electron on the N atom of the amino group. Hence the correct order of basicity is :



79. (b)

Sol. We know that

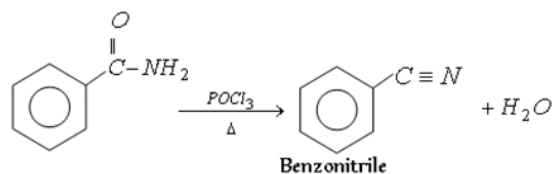


Thus in this reaction phenyl isocyanide is produced. this is called carbylamine reaction.



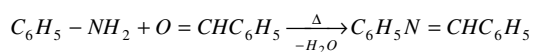
80. (d)

Sol.



81. (b)

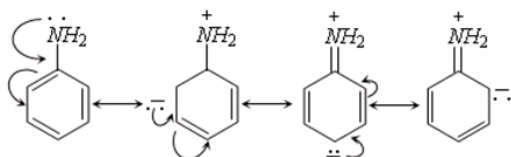
Sol. Aniline reacts with benzaldehyde and forms Schiff's base (benzal aniline) or anils.



Benzylidene aniline

82. (d)

Sol. $C_6H_5NH_2$ is least basic compound due to resonance by which the Lone pair of nitrogen takes part in resonance & due to unavailability of lone pair on N Aniline become less basic. The Lone pair of N is delocalized into benzene ring by resonance

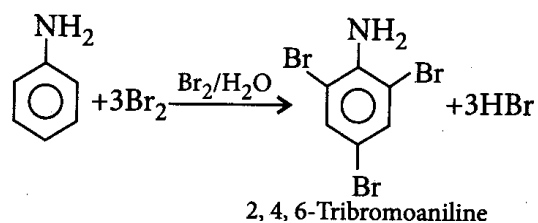


83. (c)

Sol. : Only primary amines will give carbylamines reaction .

84. (c)

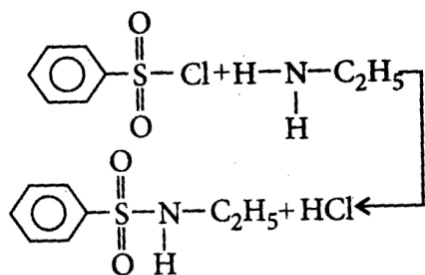
Sol.:





85. (d)

Sol. :



N-Ethylbenzenesulphonamide
(soluble in alkali)

86. (b)

Sol. : Gatterman reaction

87. (a)

Sol. A. Fleming discovered penicillin in 1929.

88. (c)

Sol. An analgesic drug is one which relieves or decreases the pain e.g., analgin, aspirin (belongs to non-narcotics and morphine, codein, heroin (belongs to narcotics class))

89. (b)

Sol. Aspirin is antipyretic i.e., a drug which is responsible for lowering the temperature of a feverish organism to normal, other antipyretic drugs are paracetamol, Phenacetin.

90. (c)

Sol. Tranquilizers reduce anxiety and tension they are also called psychotropic drugs. These are of two types.

(a) Sedative the drugs used for violent and mentally agitated patient e.g., Equanil and diazepam.

(b) Antidepressant – The drugs are used to patients who are highly depressed and lose self confidence e.g. tofranil, valium, amphetamine etc.



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EDT-20 (NEET) SOLUTIONS

91. (a)

Sol. These drugs produce sleep and are habit forming common example of hypnotic drugs are Luminal and Saconal.

92. (b)

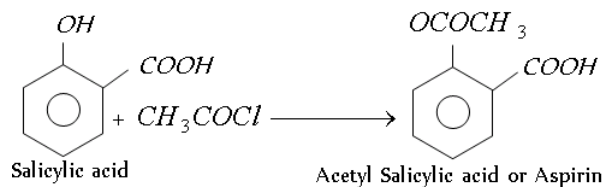
Sol. Paracetamol is an antipyretic.

93. (a)

Sol. It is the very effective antibiotics for tuberculosis.

94. (c)

Sol.



95. (a)

Sol. Salol is Phenyl Salicylate used as antiseptic.

96. (a)

Sol. Substance used for the treatment of malaria are antimalarial e.g. Quinine, chloroquine.

97. (b)

Sol. Morphine is analgesic.

98. (a)

Sol. It is an alkaloid a class of organic compound basic nature of plant origin containing atleast one nitrogen atom in a ring structure of molecule.

99. (d)

Sol. T.B., Cholera etc. are Communicable diseases.

100. (a)

Sol. Bithional has disinfectant nature (kill bacteria)



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EDT-20 (NEET) SOLUTIONS

BOTANY		ZOOLOGY	
Q. NO.	[ANS]	Q. NO.	[ANS]
101	B	151	D
102	B	152	A
103	B	153	D
104	A	154	B
105	D	155	A
106	B	156	C
107	A	157	C
108	B	158	B
109	D	159	B
110	A	160	B
111	B	161	B
112	D	162	C
113	A	163	B
114	D	164	A
115	B	165	D
116	B	166	A
117	C	167	B
118	C	168	C
119	D	169	B
120	D	170	C
121	A	171	B
122	C	172	C
123	A	173	C
124	D	174	C
125	B	175	B
126	C	176	A
127	B	177	C



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EDT-20 (NEET) SOLUTIONS

BOTANY		ZOOLOGY	
128	D	178	D
129	B	179	C
130	B	180	D
131	C	181	A
132	D	182	D
133	C	183	B
134	B	184	A
135	D	185	D
136	A	186	D
137	A	187	D
138	B	188	B
139	D	189	B
140	A	190	B
141	D	191	D
142	C	192	A
143	B	193	C
144	D	194	A
145	C	195	B
146	C	196	C
147	B	197	C
148	D	198	B
149	D	199	D
150	C	200	D