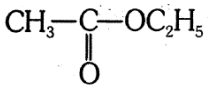
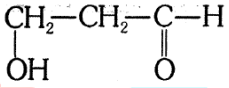
EXERCISE-1 (Conceptual Questions) **Build Up Your Understanding**

STRUCTURAL ISOMERISM

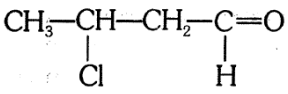
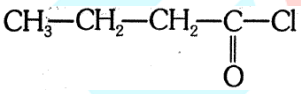
1. $CH_3CHOHCH_2CHO$ and $CH_3CH_2CH_2COOH$ constitute a pair of :-
(1) Position isomers (2) Metamers (3) Optical isomers (4) Functional isomers

2. The minimum number of carbon atoms present in an organic compound to show chain isomerism is
(1) 2 (2) 3 (3) 5 (4) 4

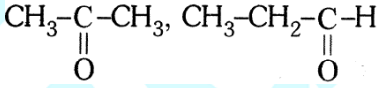
3. The minimum number of carbon atoms present in an organic compound to be able to show position isomerism is :-
(1) 3 (2) 4 (3) 2 (4) 5

4. Which of the following compound is isomeric with propanoic acid :-
(1)  (2) 
(3) $CH_3–CH(OH)–CH_3$ (4) $CH_3O–CH_2–CH_2OH$

5. $CH_3–NH–C_2H_5$ and $(CH_3)_3N$ show which type of isomerism :-
(1) Position (2) Functional (3) Chain (4) None

6.  and  are constitute a pair of :-
(1) Position isomers (2) Metamers
(3) Optical isomers (4) Functional group isomers

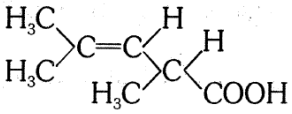
7. The minimum number of carbon atoms in ketone to show position isomerism :-
(1) 3 (2) 4 (3) 5 (4) 6

8. Which are metamers :-
(1) $CH_3–O–CH_2CH_2CH_3$, $CH_3–CH_2–O–CH_2–CH_3$
(2) $C_2H_5–O–C_2H_5$, $CH_3CH_2CH_2CH_2OH$
(3) $CH_3–O–C_2H_5$, $CH_3–CH_2–O–CH_3$
(4) 

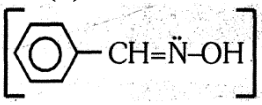
9. Which similarity is necessary for isomerism
(1) Molecular formula (2) Structure formula
(3) Physical formula (4) Chemical formula

10. Number of structural isomers of C_6H_{14} is -
(1) 3 (2) 4 (3) 5 (4) 6

GEOMETRICAL AND OPTICAL ISOMERISM

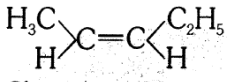
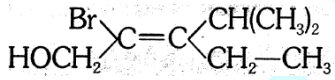
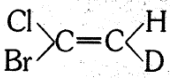
11.  Exhibits :-

(1) Tautomerism
(2) Optical isomerism
(3) Geometrical isomerism
(4) Geometrical and optical isomerism

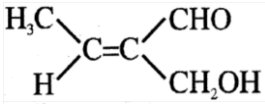
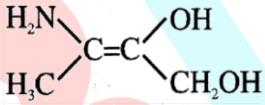
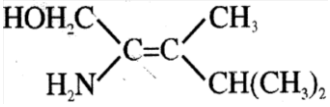
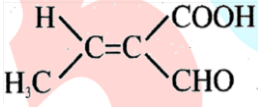
12. The isomerism shown by Benzaldoxime  is:-

(1) Optical (2) Geometrical (3) Metamerism (4) All of these

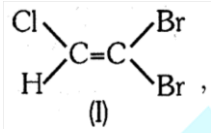
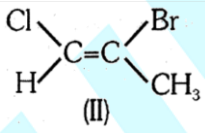
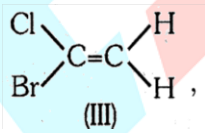
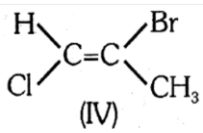
13. Which of the following has Z-configuration :

(1) 
(2) 
(3) 
(4) All the above

14. Which of the following has E-configuration :

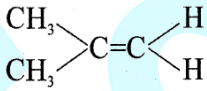
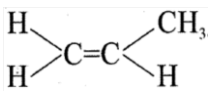
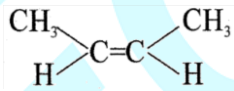
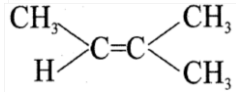
(1) 
(2) 
(3) 
(4) 

15. Which is a pair of geometrical isomers :-

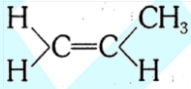
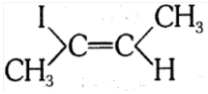
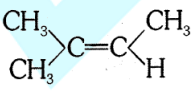
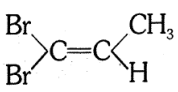

(I)

(II)
,

(III)
,

(IV)

(1) I and II (2) I and III (3) II and IV (4) III and IV

16. Which can show 'Geometrical isomerism' :-

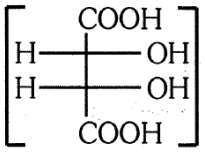
(1) 
(2) 
(3) 
(4) 

17. Geometrical isomerism is shown by :

(1) 
(2) 
(3) 
(4) 

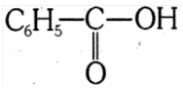
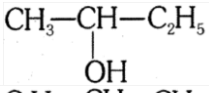
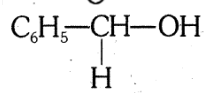
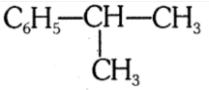
18. The simplest alkanol exhibiting optical activity is

(1) n-butyl alcohol (2) Isobutyl alcohol
(3) s-butyl alcohol (4) t-butyl alcohol

19. Meso-tartaric acid  is optically inactive due to the presence of :

(1) Molecular symmetry
(2) Molecular asymmetry
(3) External compensation
(4) Two asymmetric carbon atoms

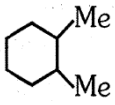
20. Which is optically active molecule :-

(1) 
(2) 
(3) 
(4) 

21. The number of stereo isomers of glucose (a six carbon sugar) is :-

(1) 8 (2) 12 (3) 16 (4) 24

22. Number of chiral carbon atoms in the compound X, Y and Z respectively would be :\

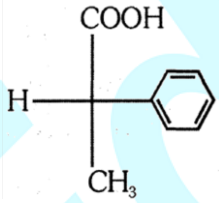
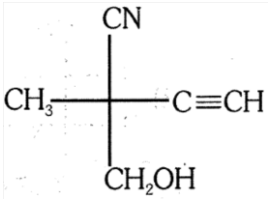
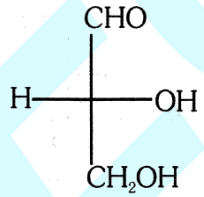
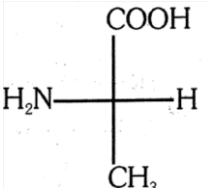
X ⇒ 

Y ⇒ 

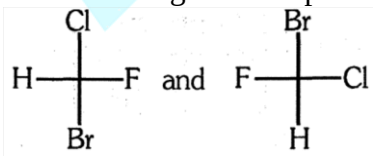
Z ⇒ 

(1) 2, 1, 1 (2) 1, 1, 1 (3) 2, 0, 2 (4) 2, 0, 1

23. Identify R configuration :

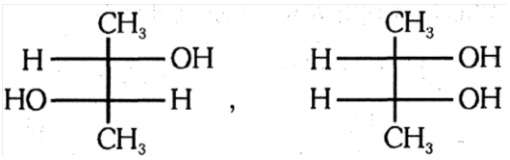
(1) 
(2) 
(3) 
(4) 

24. The following two compounds are



(1) Enantiomers (2) Diastereomers (3) Identical (4) Epimers

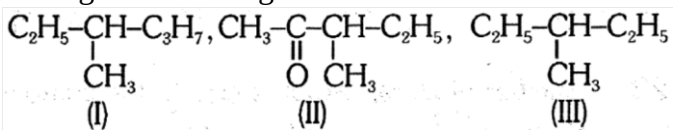
25. If optical rotation produced by the compound [A] is +65°, then produced by the compound [B] is-



[A] [B]

(1) +65° (2) –65° (3) Zero (4) Unpredictable

26. Among the following structure I to III



(I) (II) (III)

It is true that :-

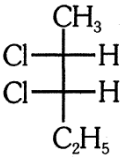
(1) All three are chiral compounds

(2) Only I and II are chiral compounds

(3) Only II is chiral compound

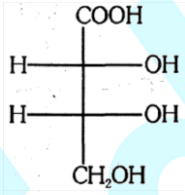
(4) Only I and III are chiral compounds

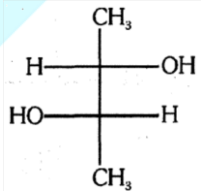
27. The absolute configuration of the compound is :

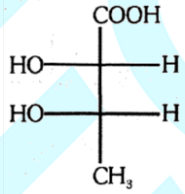


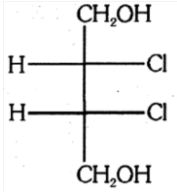
(1) 25, 3R (2) 25, 35 (3) 2R, 35 (4) 2R, 3R

28. Which one of the following is a meso-compound.

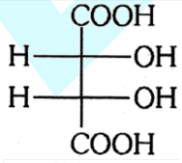
(1) 

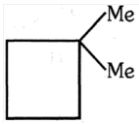
(2) 

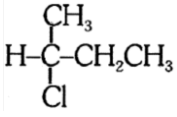
(3) 

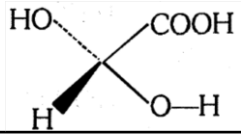
(4) 

29. Which of the following is optically active:-

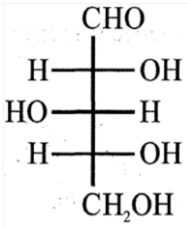
(1) 

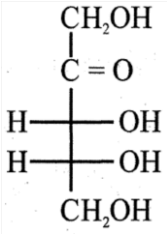
(2) 

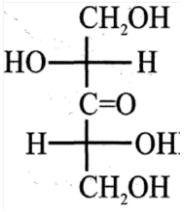
(3) 

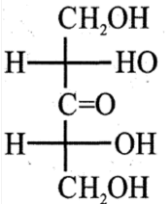
(4) 

30. Amongst the following, which one could be the structure of an optically inactive monosaccharide having the molecular weight 150 :-

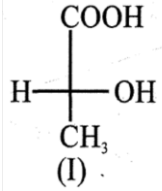
(1) 

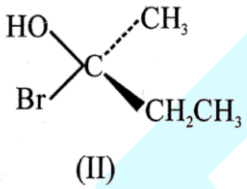
(2) 

(3) 

(4) 

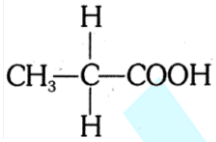
31. The correct configuration assigned for compounds (I) and (II) respectively are :-

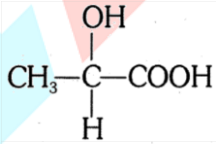

(I)

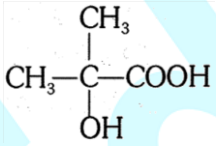

(II)

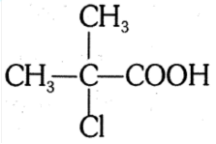
(1) R, R (2) S, 5 (3) R, 5 (4) 5, R

32. Which compound is optical active –

(1) 

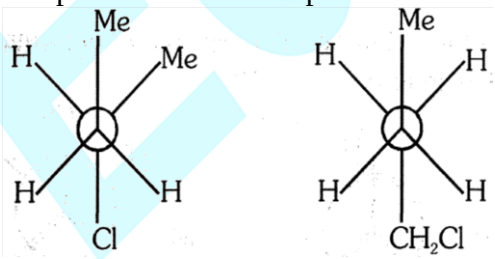
(2) 

(3) 

(4) 

CONFORMATIONAL ISOMERISM

33. The pair of structures represents:-



(1) Enantiomers (2) Position isomers
(3) Conformers (4) None

34. Rotational angle require. to get maximum stable conformer from minimum stable conformer in n-butane is :

(1) 360º (2) 180º (3) 120º (4) 240º

35. Which conformation of butane will have the minimum energy :-
(1) Gauche (2) Anti/staggered (3) Eclipsed (4) None

ANSWER KEY

EXERCISE-I

1.	(4)	**2.**	(4)	**3.**	(3)	**4.**	(2)	**5.**	(2)	**6.**	(4)	**7.**	(3)
8.	(1)	**9.**	(1)	**10.**	(3)	**11.**	(2)	**12.**	(2)	**13.**	(4)	**14.**	(4)
15.	(3)	**16.**	(3)	**17.**	(2)	**18.**	(3)	**19.**	(1)	**20.**	(2)	**21.**	(3)
22.	(4)	**23.**	(3)	**24.**	(1)	**25.**	(3)	**26.**	(2)	**27.**	(3)	**28.**	(4)
29.	(3)	**30.**	(4)	**31.**	(1)	**32.**	(2)	**33.**	(2)	**34.**	(2)	**35.**	(2)