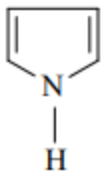
CHAPTER - 08

ORGANIC CHEMISTRY - SOME BASIC PRINCIPLES AND TECHNIQUES - PART I

NOMENCLATURE AND ISOMERISM

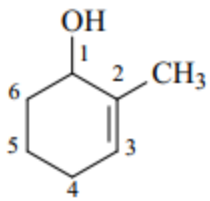
PART I - (JEEMAIN LEVEL)

SECTION - I

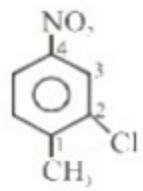
1. 3 

2. 1 Order of priority for the mentioned functional groups is

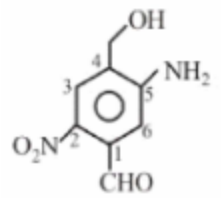
   Carboxylic acid > acid halide > aldehyde > hydroxyl > amino

3. 2 

4. 1 2-propoxypropane

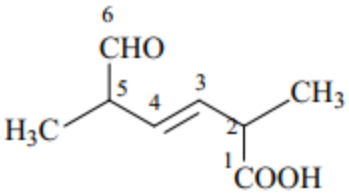
5. 4  2-chloro–1-methyl–4–nitrobenzene

6. 3

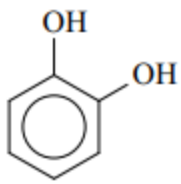


5-amino-4-hydroxymethyl-2-nitrobenzaldehyde

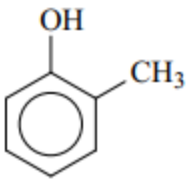
7. 3



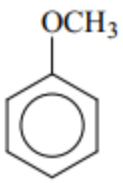
8. 3



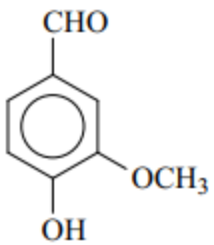
Catechol



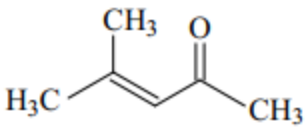
o-cresol



Anisole

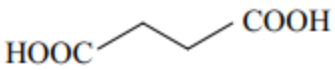


Vanillin

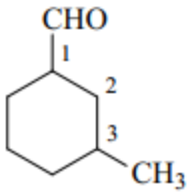


Mesityl oxide

9. 4

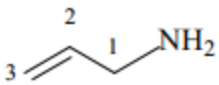


Succinic acid



γ -Methylcyclohexane carbaldehyde

10. 4



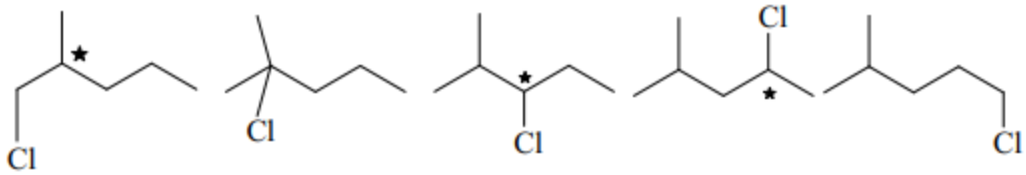
Allylamine

11. 14 C_6H_{14} has five whereas C_7H_{16} has nine structural isomers

12. 4 The given compound has two stereoisomers. Thus it has 2^2 stereoisomers.

13. 2 Compounds 1 and 2 are chiral. Compounds 3,4 and 5 have plane of symmetry, thus achiral.

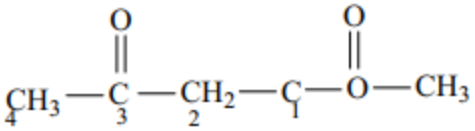
14. 8



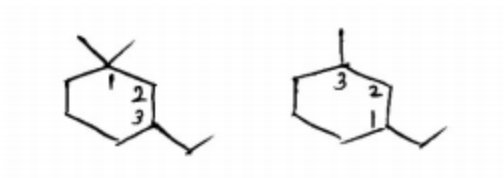
Total isomers = 8

15. 2 Two optically active isomers and one mesoform

16. B



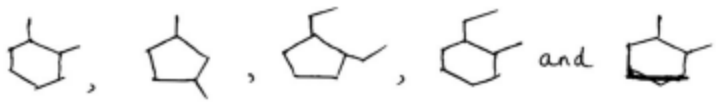
17. A



18. B The structure cannot show geometrical isomerism as one of the carbons along the double bond has identical group (methyl).

19. D But-2-enoic acid can show geometrical isomerism

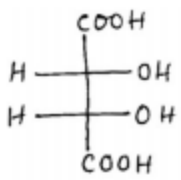
20. B



geometrical isomerism.

21. A Non-superimposable mirror images

22. B Structure of meso-tartaric acid is,

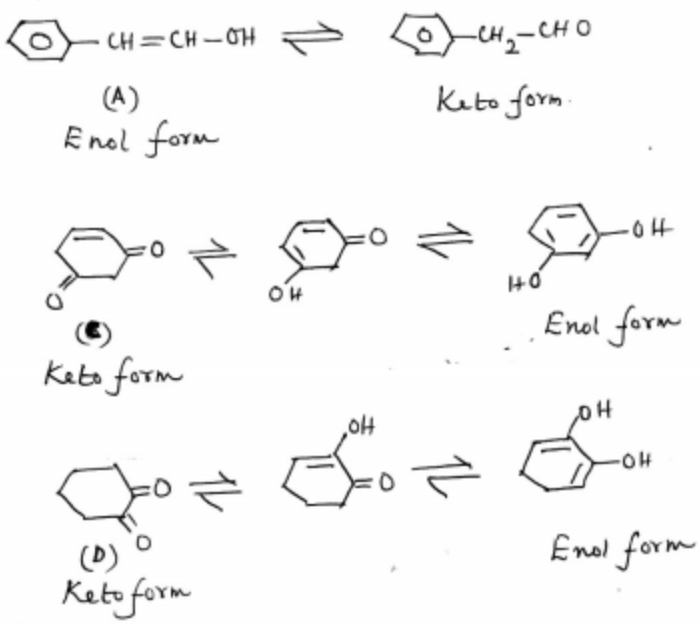


It has two chiral carbon atoms, but it has one plane of symmetry, thus optically inactive.

SECTION - IV (More than one correct answer)

23. ACD

(B) cannot show keto-enol tautomerism as it does not contain α-H atom(s).



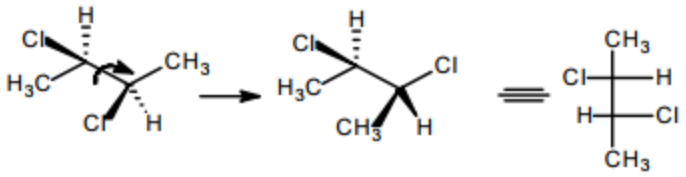
24. BCD

E & F → Tautomers

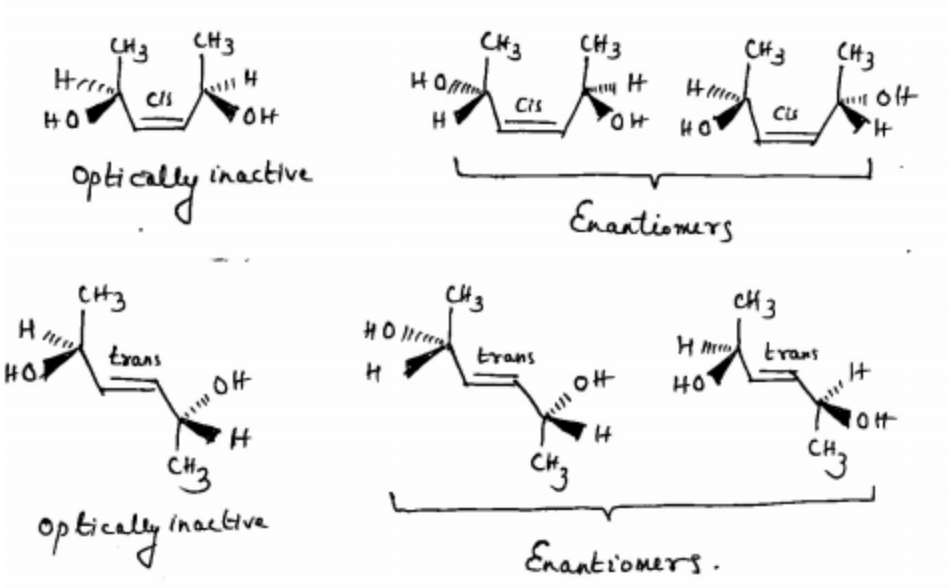
E & G → Tautomers

F & G → Geometrical isomers / diastereomers

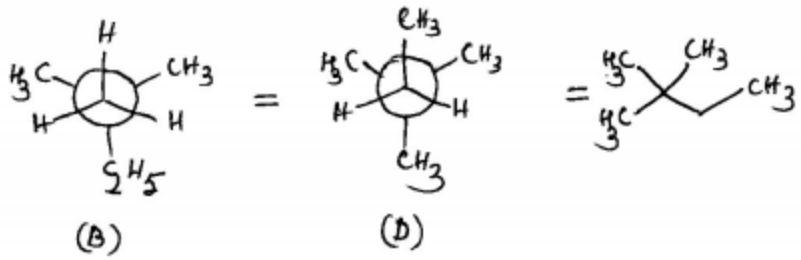
25. A



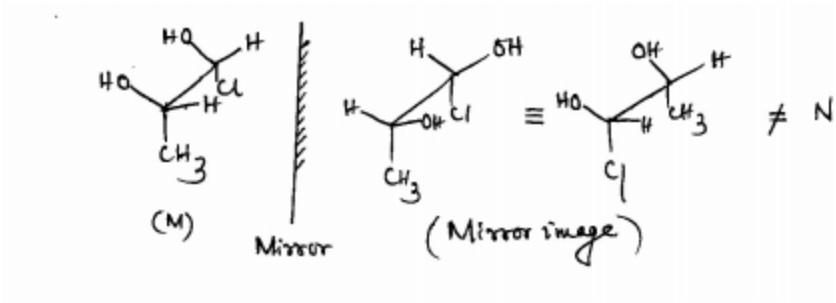
26. AD



27. BD

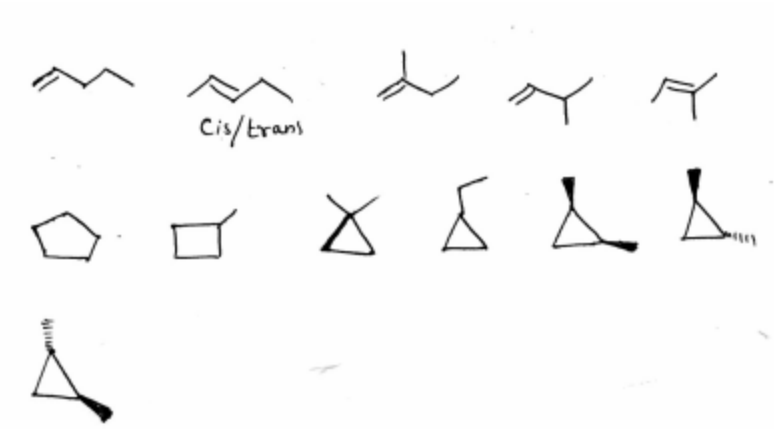


28. ABC



SECTION - V (Numerical Type - Upto two decimal place)

29. 13



30. 4 Number of stereocentres = 2

∴ Total number of stereoisomers = $2^2 = 4$

31. 5 $-OCH_3$, $-Br$, $-CH_3$, $-NO_2$ and $-F$ are always treated as prefix substituents.

SECTION - VI (Matrix Matching)

32. D Cyclic amide ⇒ Lactam

Cyclic ester ⇒ Lactone

33. C Esters can show metamerism