

ISOMERISM

1. Assertion A : Enol form of acetone $[\text{CH}_3\text{COCH}_3]$ exists in $< 0.1\%$ quantity. However, the enol form of acetyl acetone $[\text{CH}_3\text{COCH}_2\text{OCCH}_3]$ exists in approximately 15% quantity.

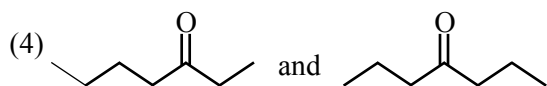
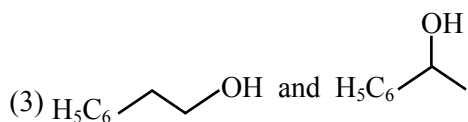
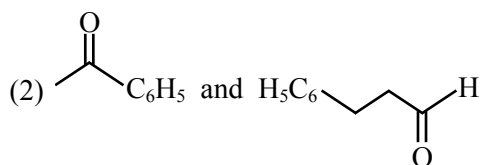
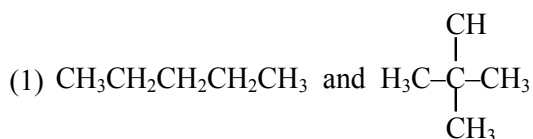
Reason R : enol form of acetyl acetone is stabilized by intramolecular hydrogen bonding, which is not possible in enol form of acetone.

Choose the correct statement :

- (1) A is false but R is true
 - (2) Both A and R are true and R is the correct explanation of A
 - (3) Both A and R are true but R is not the correct explanation of A
 - (4) A is true but R is false
2. Compound with molecular formula $\text{C}_3\text{H}_6\text{O}$ can show :

- (1) Positional isomerism
- (2) Both positional isomerism and metamerism
- (3) Metamerism
- (4) Functional group isomerism

3. Which one of the following pairs of isomers is an example of metamerism ?



4. Which of the following molecules does not show stereo isomerism ?

- (1) 3,4-Dimethylhex-3-ene
- (2) 3-Methylhex-1-ene
- (3) 3-Ethylhex-3-ene
- (4) 4-Methylhex-1-ene

5. The number of acyclic structural isomers (including geometrical isomers) for pentene are _____

6. Staggered and eclipsed conformers of ethane are :

- (1) Polymers
- (2) Rotamers
- (3) Enantiomers
- (4) Mirror images

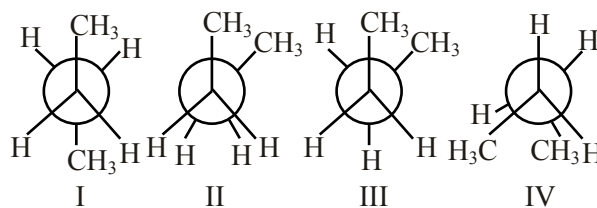
7. The dihedral angle in staggered form of Newman projection of 1, 1, 1-Trichloro ethane is degree. (Round off to the nearest integer)

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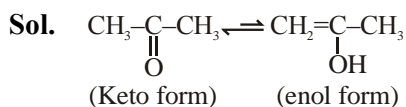
8. The number of stereoisomers possible for 1,2-dimethyl cyclopropane is :

- (1) One
- (2) Four
- (3) Two
- (4) Three

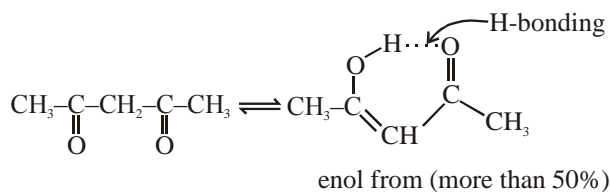
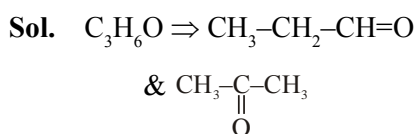
9. Arrange the following conformational isomers of n-butane in order of their increasing potential energy :



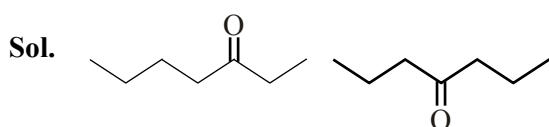
- (1) $\text{II} < \text{III} < \text{IV} < \text{I}$
- (2) $\text{I} < \text{IV} < \text{III} < \text{II}$
- (3) $\text{II} < \text{IV} < \text{III} < \text{I}$
- (4) $\text{I} < \text{III} < \text{IV} < \text{II}$

SOLUTION**1. Official Ans. by NTA (2)**

enol form of acetone is very less (< 0.1 %)

**2. Official Ans. by NTA (4)**

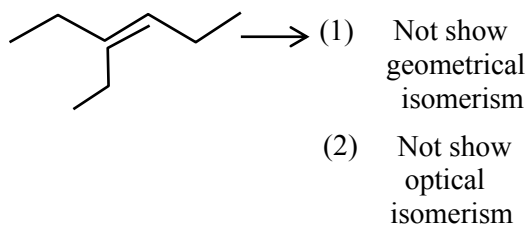
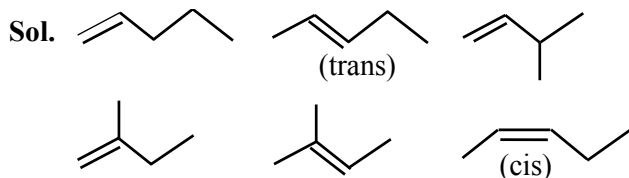
They are functional group isomerism.

3. Official Ans. by NTA (4)

are metamers.

4. Official Ans. by NTA (3)

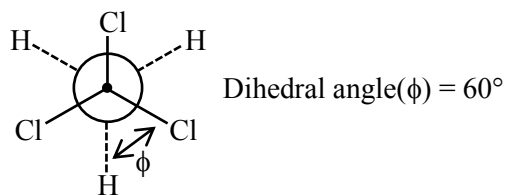
Sol. 3-Ethylhex-3-ene will not show stereo isomerism its diagram is.

**5. Official Ans. by NTA (6)****6. Official Ans. by NTA (2)**

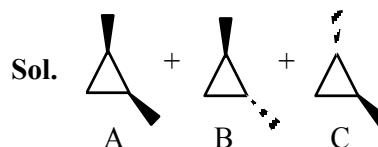
Sol. Staggered and eclipsed conformers of ethane also known as rotamers

7. Official Ans. by NTA (60)

Sol. 1,1,1-Trichloro ethane [CCl_3-CH_3]



(Newman's staggered form)

8. Official Ans. by NTA (4)**9. Official Ans. by NTA (4)**

Sol. More stable less potential energy.

Stability order : I > III > IV > II

So

Potential energy : II > IV > III > I