

[154]

SEAT No. \_\_\_\_\_

No of Printed Pages: 03

**SARDAR PATEL UNIVERSITY**  
**M.Sc. CHEMISTRY**  
**Semester – IV, External Examination**  
**November 21, 2019, Thursday**  
**Time: 02:00 pm - 05:00 pm**  
**Stereochemistry Of organic compounds [PS04CORC23]**

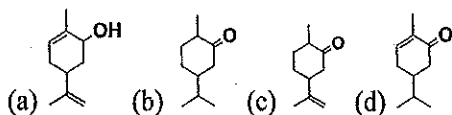
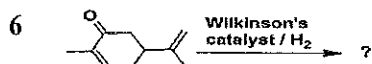
[Total Marks – 70]

N.B. Figures to the right indicate full marks

Q.1 Answer the following multiple choice questions.

[08]

- 1 Pyramidal inversion is \_\_\_\_\_ than ring inversion.  
 (a) slower (b) moderate (c) faster (d) very slower
- 2 \_\_\_\_\_ is the monomer of DNA.  
 (a) peptide (b) nucleotide (c) nucleoside (d) RNA
- 3 Which type of amino acid present in polypeptide chain?  
 (a) L-amino acid (b) L & D amino acid (c) D-amino acid (d) None of these
- 4 Meso 1,2-dichloro-1,2-diphenyl ethane gives \_\_\_\_\_ conformers.  
 (a) 6 (b) 4 (c) 3 (d) 2
- 5 Enantiomers with 4 chiral centre possesses \_\_\_\_\_ isomers.  
 (a) 12 (b) 18 (c) 14 (d) 16



- 7 Which of the following definition of an asymmetric reaction is the most accurate?  
 (a) A reaction that creates a new chiral centre in product  
 (b) A reaction that is carried out on an asymmetric starting material  
 (c) A reaction that involves a chiral reagent  
 (d) A reaction that creates a new chiral centre with selectively for one enantiomer /diastereoisomer over another
- 8 Which of the following statements regarding cycloalkanes is wrong?  
 (a) The planar form of any cycloalkane with a ring larger than cyclopropane will not be the most stable conformation.  
 (b) Any disubstituted cycloalkane can have *cis-trans* isomers.  
 (c) The least strained form of any unsubstituted cycloalkane is the chair conformation of cyclohexane  
 (d) Cyclopentane is nonplanar to avoid the torsional strain between adjacent C-H bonds.

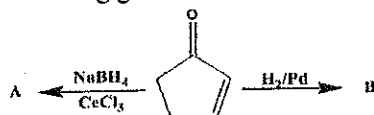
①

(P.T.O)

Q.2 Answer the following questions. (ANY SEVEN)

[14]

- Define the following terms.  
1) podands 2) spherands
- Write a short note on Cyclodextrins.
- 'Axial conformer of 3-alkyl cyclohexanone is more stable than equatorial conformer' explain.
- Explain effect of an angular methyl group in cis and trans decalin.
- Write basic principles of resolution of racemic mixtures.
- Describe conformation of 2,3-dibromo butane.
- Define enantioselective and diastereoselective with suitable example.
- Give the two examples of asymmetric synthesis method which use chiral substrates.
- Write product A & B for following given reaction.



Q.3

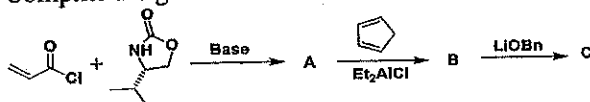
[A] What is Sharpless asymmetric epoxidation? Explain with mechanism.

[06]

[B] Answer ANY THREE of the following

[06]

- Complete the given reaction

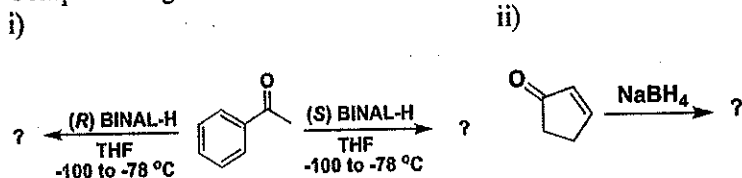


- Use Cram's rule for given reactions to predict major product and label its stereocenters with R or S.



- Write short note on mono & diisopinocampheylborane

- Complete the given reactions



- Define chemoselectivity and regioselectivity with example.

②

Q.4

[A] Explain conformational analysis of n-pentane and n-butane. [06]

[B] Write a Brief Note on ANY TWO of the following. [06]

- 1 Method for resolution of (+) octane-2-ol.
- 2 Resolution by chromatography.
- 3 Factors favoring preferential crystallization.
- 4 The chiral pool method.

Q.5

[A] Write and explain characteristics of bicyclo[2.2.1]heptanes. [06]

[B] Answer the following questions. [06]

- 1 Describe conformation of non-geminal dimethyl cyclohexanes.
- 2 Note on pyramidal inversion with examples.

OR

[B] Answer the following [06]

- 1 'All the three conformers of quinolizidine are in dynamic equilibrium' explain.
- 2 Describe salient features of decalins.

Q.6

[A] Draw structure of DNA Double-Helix and write its Salient Features. [06]

[B] Answer the following questions. [06]

- I Write a brief note on 'Calixarines'.
- II Write characteristics of Polypeptide chain and explain alpha helical structure of protein.

[B] OR

Answer the following questions.

- I Explain two general types of cyclophanes.
- II Explain receptor having multiple hydrogen bonding site with examples.

