

[A-20]

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SARDAR PATEL UNIVERSITY
M.Sc. Semester-IV (Organic Chemistry) Examination
Saturday, 25th April 2015
PS04CORCO3-Stereochemistry of Organic Compounds

Time: 10:30am to 01:30pm

Marks: 70

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- Q.1 Select the correct answer. 08
- 1 Characteristics required for a resolving agent is/are....
(i) Ease of preparation (ii) High optical purity
(iii) Pure form (iv) Above All
 - 2 D-Glucose and D-mannose are...
(i) Diastereomers (ii) Anomers
(iii) Epimers (iv) All
 - 3 Resolution through kinetic asymmetric transformation ,
thermodynamically controlled condition is expressed by ...
(i) $\Delta G = - RT \ln p/n$ (ii) $\Delta G = - RT \ln n/p$
(iii) $\Delta G^* = - RT \ln p^*/n^*$ (iv) $\Delta G^* = - RT \ln n^*/p^*$
 - 4 In case of formation of double helix, approximate stabilization energy of
A= T is...
(i) 50 KJ/mole (ii) 40 KJ/mole
(iii) 70 KJ/mole (iv) 60 KJ/mole
 - 5 In axial haloketone rule, a vertical plane 'A' passes through carbon
number.....
(i) 6 (ii) 2
(iii) 3 (iv) None of this
 - 6 A pyramidal inversion existing in
(i) Pyridine (ii) pyran
(iii) piperidine (iv) None of this
 - 7 A resolving agent, working via molecular complex formation is
(i) Digitonine (ii) Brucine
(iii) Camphor (iv) Cinchonine
 - 8 Mathematically, optical rotation ' α ' is equal to
(i) $\frac{\pi}{\lambda} [n_L - n_R]$ (ii) $\frac{\pi}{\lambda} [n_R - n_L]$
(iii) $[\alpha]_D^t$ (iv) $[\alpha]_r^D$

- Q.2 Answer the following(Any Seven) 14**
- 1 Define the terms: (i) Racemic Mixture (ii) Optical Purity.
 - 2 Discuss the Cram's Rule.
 - 3 Draw the structure of bicyclo[2.2.2]Octane and bicyclo[3.2.1]Octane.
 - 4 Aldol condensation is diastereoselective. Explain.
 - 5 Discuss the prelog's Rule.
 - 6 Discuss the Resolution of Aldehyde and ketone.
 - 7 Draw the conformation of cycloheptane as monocyclic compound.
 - 8 State in brief "cotton effect" and its importance.
 - 9 State 'Huckel-Mobius (H-M) method and predict the out put of the electrocyclization of butadiene and hexatriene.
- Q.3 A Describe in detail: 06**
- (A) Resolution through formation of diastereomers.
 - (B) Preferential crystallization.
- B Write short note on Asymmetric Synthesis by 06**
- (A) Sharpless epoxidation &
 - (B) Wilkinson as catalysts.
- OR**
- B Write a note on Experimental procedure for resolution of (±) 2-Octanal. 06**
- Q.4 A What do you mean by 'conformational energy'? Draw the potential energy diagram of n-butane, on the bases of different conformers. 06**
- B Draw the conformations of cyclooctane and cyclononane under monocyclic compound. 06**
- OR**
- B Describe conformational analysis of Bicyclo [4.4.0] decane and its 9-methyl derivative. 06**
- Q.5 A State in brief correlation diagram of [2+2] cycloaddition reaction. 06**
- B State in brief sigmatropic rearrangement, with suitable examples. 06**
- OR**
- B Write a note on group transfer reaction. 06**
- Q.6 A What do you mean by circular dichroism (CD)? Illustrate CD and ORD curves. 06**
- B What is 'Octant rule'? Discuss the octant rule in cyclohexanone. 06**
- OR**
- B Describe in brief 'cyclodextrins' and its importance. 06**