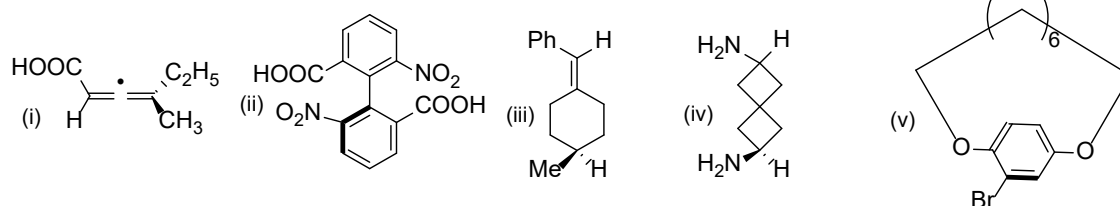


- Q 1. (a) Which isomer is more stable, *trans*-decalin or *cis*-decalin? Draw the chair form for the cyclohexane rings. 3
(b) How many stereoisomers are possible for 1,2,3-trimethylcyclobutane. Identify chiral and achiral compounds. 6
- Q 2. (a) Find out the absolute configuration of the following compounds 10



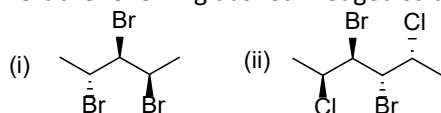
- (b) Give the stereochemical nomenclature for the following compounds 4



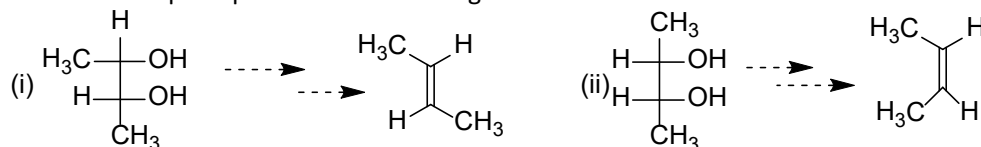
- (c) Draw the structures of compounds given below 4

- (i) (2E,4Z)-2,4-hexadienoic acid (ii) (1Z,3Z)-1-chloro-3-[2-chloro-(E)-vinyl]-1,3-pentadiene

- Q 3. (a) Convert the following dashed-wedged structures to Fischer projections 4



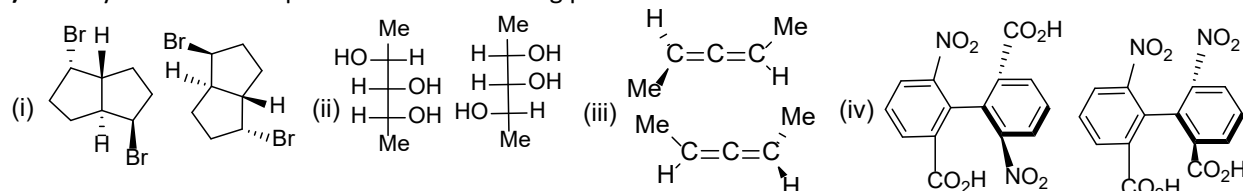
- (b) Write all the steps required in the following stereochemical transformations 4



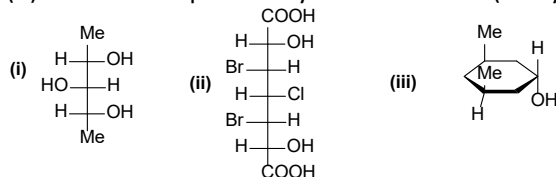
- (c) Draw the preferred conformation (most stable) for each of the following compounds 8

- (i) 1-methyl-1-phenylcyclohexane (ii) *cis*-1,3-dimethylcyclohexane
(iii) 1,1,2-trimethylcyclohexane (iv) *cis*-1-*tert*-butyl-4-chlorocyclohexane

- Q 4 (a) Identify the relationship between the following pairs. 6



- (b) Find out the pseudoasymmetric centre (if any) in the following compounds 3



- Q 5 (a) *Cis* and *trans*-1,2-dibromocyclohexanes undergo elimination (bromine) with iodide to give cyclohexene. 3

The *trans* dibromide reacts only 11.5 times as fast as the *cis* is, explain.

- (b) Identify the elements of symmetry (if any) in the following molecules. 3



- (c) Consider 2-methylbutane, sighting along the C₂-C₃ bond, draw a Newman projection of the most stable conformation. 2