No. of Printed Pages : 3

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IV Semester M.Sc. (CBCS) Examination, July - 2019

CHEMISTRY

C-402-OC : Stereochemistry and Retro Synthetic Analysis

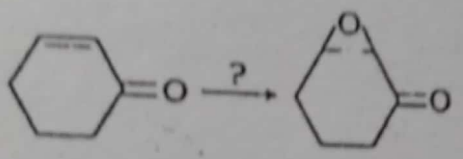
Time : 3 Hours

Max. Marks : 70

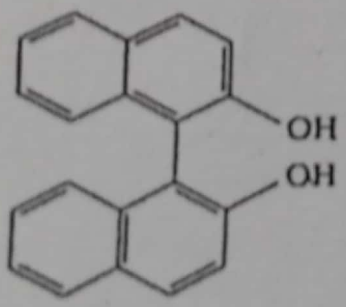
Instruction : Answer question no.1 and any five of the remaining.

1. Answer any ten of the following : 10x2=20

(a) How the following conversion is achieved ?



(b) Assign the configuration in the following and give proper explanation.



(c) What are invertomers ? Give examples.

(d) How can you predict the maximum number of possible stereoisomers for a compound having n-stereocentres ? Explain taking 2-bromo-3-clorobutane as your example.

(e) Is trans-1, 2-dimethyl cyclohexane chiral ? Explain.

(f) Why is Chloro-cyclopropane achiral ? Explain.

(g) What is one group and two group disconnection ? Explain taking suitable example.

(h) What are FGI and FGA ? Explain with proper examples.

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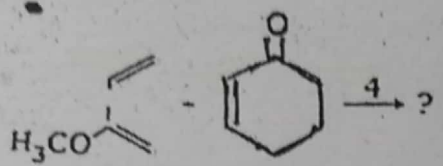
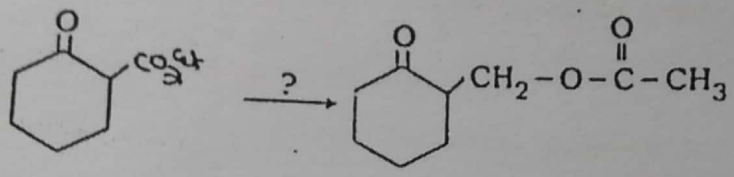
(i) Predict the product in the following :



(j) Give one example each of Stereoselective and Stereospecific reactions.

(k) How is the following conversion achieved ?



(l) Suggest a route for the synthesis of following Dipeptide Alanyl-Glycine from Glycine.

2. (a) What is Chiral recognition ? How is it used in resolution ? 5+5=10

(b) How can you decide if a conformationally mobile molecule is Chiral or not ? Explain taking examples.

3. (a) What are cyclophones ? What structural features are necessary to have enantiomerism in these compounds. 4+6=10

(b) Write briefly on the following :

(i) Distance Rule

(ii) Mill's Rule

4. (a) Explain α-haloketone rule and its applications. 4+6=10

(b) Write briefly on the following :

(i) R, S - Configuration

(ii) Transannular Reaction

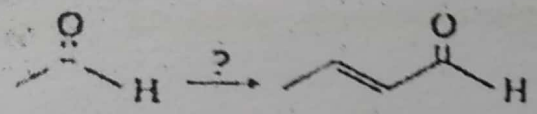
5. (a) Write briefly on anamolous α-ray scattering technique. 4+3+3=10

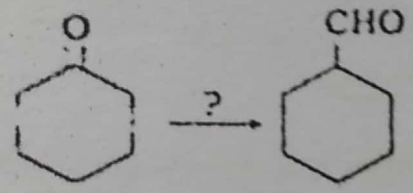
(b) How can one recognise a meso compound ? Explain taking proper example.

(c) Why is in cyclic compounds, the number of Stereoisomers generally lesser than their cyclic counter parts ? Explain with examples.

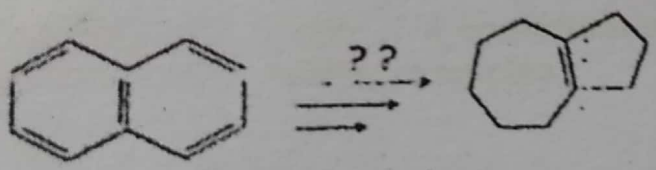
6. (a) What are the various reagents available for protection of carbonyl groups ? 4+6=10

(b) How is the following transformation achieved ?

(i) 

(ii) 

7. (a) How do you bring about the following multistep conversion ? 5+5=10



(b) Suggest a logical retro analysis for aromadendrene.

8. (a) Sketch the retro analysis of longifloene and outline its synthesis. 6+4=10

(b) Explain the utility of following name reactions in organic synthesis taking proper examples.

(i) Diels - Alder Reaction

(ii) Robinson Annulation

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