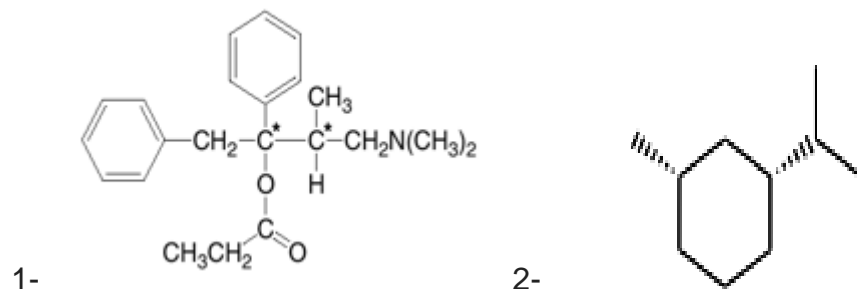


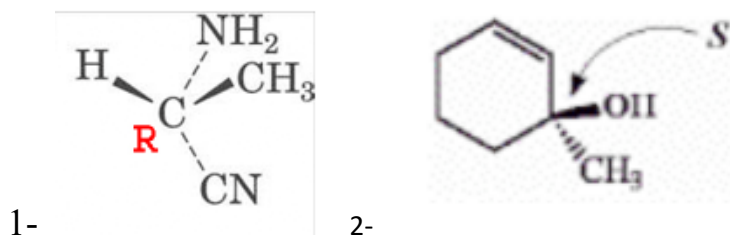
## Answer of the questions of 1<sup>st</sup> trial 2024-2025

A1) Mark the stereogenic carbons with a star. 5 marks



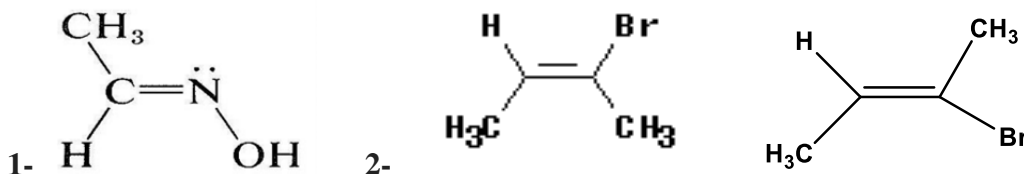
A2) Label each asymmetric carbon in the compound below as an R or S configuration. 10 marks

- 1- Assign priority of the groups around a chiral center. (-NH<sub>2</sub>, -CN, -CH<sub>3</sub>, -H)
- 2- Rotate the assigned molecule until the lowest priority group (4) is in the back, this can be done by (Fixing one of the groups and rotate the others clockwise or counterclockwise).
- 3- Clockwise movement is R, while counterclockwise is S.



- 2- The 2<sup>nd</sup> one no need a rotation since no. 4 is away from view, just need to assign priority to the groups.

A3) Show the stereochemistry of the isomers below. 10 marks



After Assigning priority of the groups the first and second isomers are:

- 1- E (anti) isomer                      2- E- isomer, Z-isomer

**Q4) Answer briefly and show the reason. 20 marks**

**a- What are some common techniques used for resolution?**

Common techniques for resolution include:

- Chiral Chromatography
- Diastereomer Formation

Reacting the chiral compound with a chiral resolving agent to form diastereomers, which can then be separated

**b- How does stereospecificity differ from stereoselectivity?**

A- Stereospecificity refers to the formation of a specific stereoisomer from specific starting materials, while stereoselectivity refers to the preference for one stereoisomer over others, although multiple stereoisomers are possible from the same starting materials.

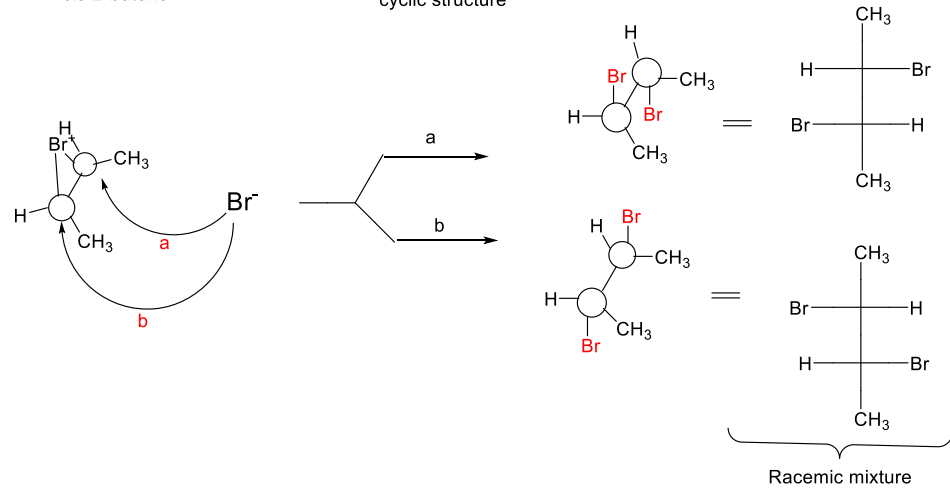
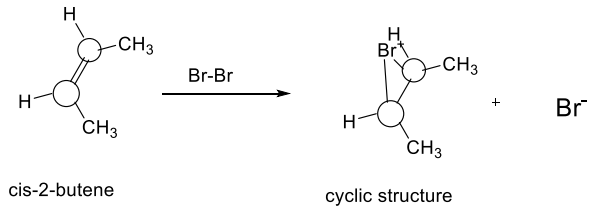
**c- Can you change the configuration of a chiral center without breaking any bonds?**

A: No, changing the configuration of a chiral center without breaking any bonds is not possible. To change the configuration, you would need to break and rearrange bonds, resulting in a different molecule.

**d- How can you identify a compound as being prochiral?**

Answer: A compound is identified as being prochiral if it can be converted to a chiral compound by changing only one of its attached groups.

**Q5) Write the mechanism for the addition of Bromine to the cis-2-butene. 5 marks**



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