

212162

S-2117

M.Sc. (Second Semester)

Examination, 2024-25

CHEMISTRY

Paper – Second

(Organic Chemistry-II)

(CHEM-008)

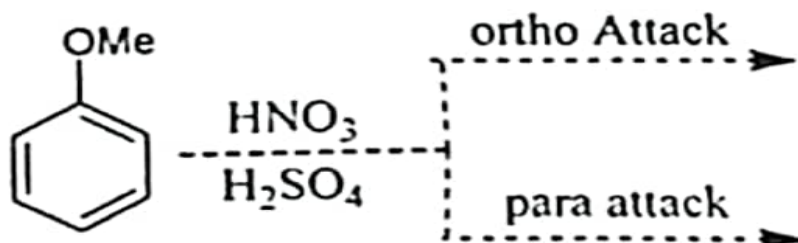
Time : Two Hours]

[Maximum Marks : 60

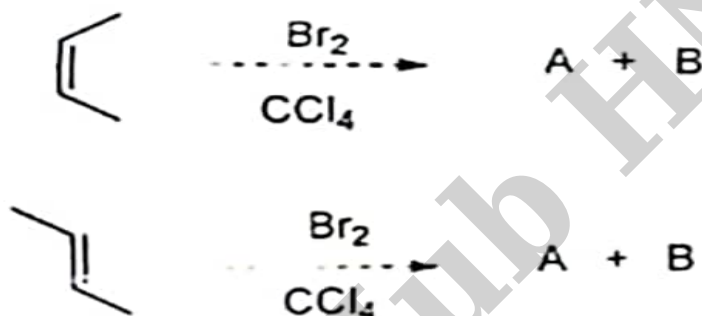
Note : Attempt any *four* questions. All questions carry equal marks.

1. Why does a sulfonic acid group deactivate an aromatic ring to electrophilic substitution and direct it to the 3-position? Explain.

Complete the following ArES reaction and write its mechanism.

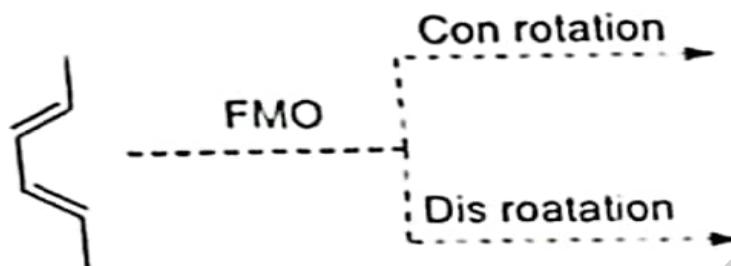


- (a) Write a note on how the presence of EWG influences the ArNSR reactions?
- (b) Write the Von-Rictor and Smiles rearrangement with one example each.
- (a) Write about allylic halogenation reaction using an NBS reagent.
- (b) Write the name of the reaction and its mechanism.
- (a) Write a mechanistic pathway to complete the following reaction :

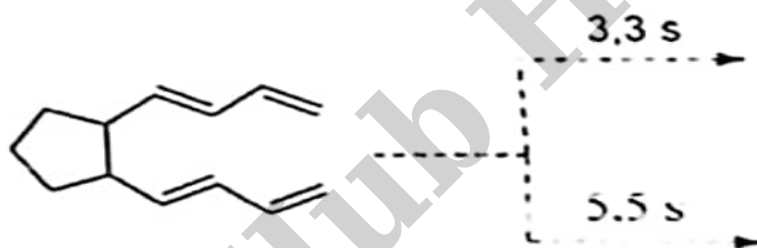


- (b) What is Michael addition reaction? Give one example.
- (a) Explain the metal hydride reduction reaction of carbonyl, acids, ester, and nitriles by taking one example each.
- (b) Write about Claisen and Perkin condensation reactions.
- (a) Write the mechanism and orientation in pyrolytic reactions.
- (b) Write the mechanism of the E₂ and E₁CB reactions with one example each.

- (a) Draw the π -MO diagram of 1,3-butadiene and 1,3,5-hexatriene.
- (b) Complete the following electro-cyclic reaction using the FMO approach.



8. (a) What are sigma-tropic reactions? Complete the following conversion :



- (b) Discuss the selection rule for [2+2]-cycloaddition reaction using the PMO method.
