MANIPAL
ACADEMY of HIGHER EDUCATION

(Deemed to be University under Section 3 of the UGC Act, 1956)

Reg. No.

DEPARTMENT OF SCIENCES, II SEMESTER M.Sc (CHEMISTRY)
END SEMESTER EXAMINATIONS, Dec. 2020
SUBJECT: ADVANCED ORGANIC CHEMISTRY [CHM 5103]

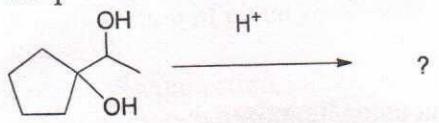
(REVISED CREDIT SYSTEM-2017)

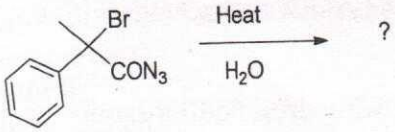
Time: 3 Hours Date: 31.12.2020 MAX. MARKS: 50

Note: (i) Answer **ALL** questions
(ii) Write reactions, structures, and mechanisms wherever necessary

1A. Explain the following named reactions with suitable mechanism.
i) Hoffmann rearrangement **ii)** Benzidine rearrangement

B. i) Distinguish between Curtius and Schmidt rearrangement reactions.
ii) Identify the product in the following reactions:

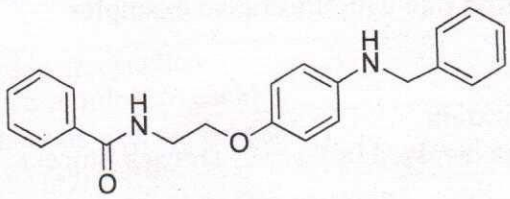
i)


ii)


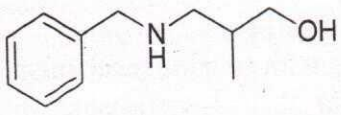
C. Give an account of Fries rearrangement and its synthetic utility.

[4+4+2]

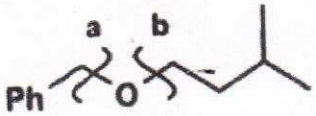
2A. Propose all the possible disconnections and suggest a synthetic scheme with reasoning for the following molecule.



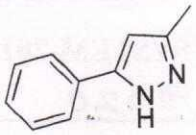
B. i) What is 1,3-diX relationship? Explain the retrosynthetic strategy for the following 1,3-diX compound.



ii) Perform the disconnection for below compound via path a and path b. Write the preferred synthetic method with reasoning



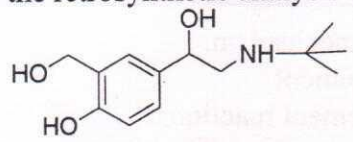
C. Suggest suitable retrosynthetic method for the following heterocyclic compound.



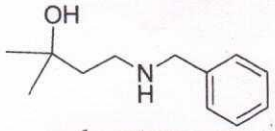
[4+4+2]

3A. Provide the retrosynthetic analysis for the following compounds

i)

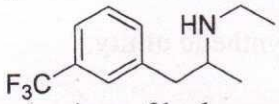


ii)



B. i) Write an explanatory note on donor and acceptor ligands.
ii) Explain the retrosynthetic strategy in case of 1,5-diX compounds with a suitable example.

C. Propose the retrosynthetic method for the following drug Fenfluoramine



[4+4+2]

4A. i) Describe the mechanism of hydrocynation reaction using homogenous catalysts
ii) Explain 16 and 18 electron rule with illustrative examples

B. Explain the following:
i) Olefin metathesis
ii) Ziegler-Natta polymerization

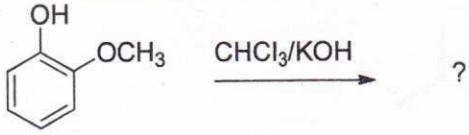
C. Briefly explain the reactions involved in Fischer-Tropsch process

[4+4+2]

5A. i) Describe the mechanism of Baeyer-Villiger oxidation. Discuss the migratory aptitude of migrating groups.
ii) Discuss the structure and stability of carbenes.

B. Explain the following named reactions with suitable mechanism
i) Meerwin-Varley-Ponndorf reduction
ii) Mannich Reaction

C. Identify the product/s and write the mechanism of the following reactions.



[4+4+2]

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