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M.Sc. (Ph. Chemistry) (Sem.-1) ADVANCED ORGANIC CHEMISTRY INCLUDING HETEROCYCLIC CHEMISTRY

Subject Code: MSPC-101 M.Code: 20501

Time: 3 Hrs. Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries SIXTEEN marks.
- 1) a) Stereospecific reactions are necessarily Stereoselective, but stereoselective does not necessarily imply stereospecificity. Justify by citing suitable example.
 - b) What is prostereoisomerism? Explain diastereotopicity and enantiotopicity with one example each.
- 2) Explain biomoieclar displacement for nucleophilic aromatic substitution and compare with aliphatic $S_{\rm N2}$ mechanism.
- 3) Write down synthetic applications of following name reactions:
 - a) Oppenauer oxidation
 - b) Reformatsky and Grignard reaction
- 4) Explain the mechanism of following reactions:
 - a) Deckmann condensation
 - b) Benzylic acid rearrangement
- 5) Write short note on any two:
 - a) 1,5 sigmatropic rearrangement
 - b) 2+2 cycloaddition with example
 - c) anti elimination
- 6) How nitration of thiophene can be carried out? Explain why 2-substitution in thiophene (and in furan and pyrrole as well) is preferred to 3-substitution.
- 7) a) Write down the important synthetic methods for pyrazole.
 - b) Explain the electrophilic and nucleophilic substitution reactions for imidazole.
- 8) Discuss the chemistry of pyridine and pyrazine.

NOTE: Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.

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