

Reg. No. :

Name :

Second Semester M.Sc. Degree Examination, May 2020

Chemistry/Polymer Chemistry

CH/CL/CM/CA/PC 222 : ORGANIC CHEMISTRY – II

(Common for Chemistry (2016 Admission Onwards) and Polymer Chemistry (2018 Admission Onwards))

Time : 3 Hours

Max. Marks : 75

SECTION A

Answer any **two** sub-questions among (a), (b) or (c) from each question. Each sub-question carries 2 marks.

1. (a) What is Hammett equation? Discuss its applications.
(b) What is meant by Linear Free energy relationships?
(c) What is Marcus theory?
2. (a) Discuss the mechanism of Pinacol rearrangement.
(b) Sketch the mechanism of :



- (c) Discuss the mechanism of conversion of 1-chlorocyclohexanone to cyclopentane carboxylic acid.
3. (a) Distinguish between aromaticity and anti-aromaticity.
(b) Describe the mechanism and stereochemistry of electrocyclic reaction.
(c) What are chelotropic reactions? Give an example.

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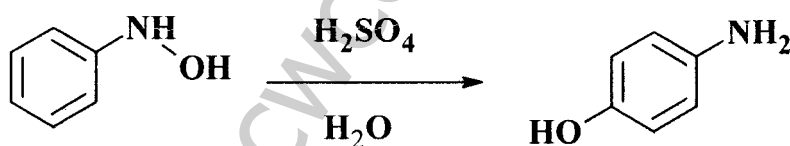
4. (a) What is Paterno-Buchi reaction?
- (b) Discuss the photochemistry of vision.
- (c) What is Barton reaction?
5. (a) What is supercritical fluid extraction? What are its advantages?
- (b) What are pigments? How are they classified?
- (c) What is the evidence for the presence of a pyridine ring in nicotine?

(10 × 2 = 20 Marks)

SECTION B

Answer either (a) or (b) of each question. Each question carries **5** marks.

6. (a) Distinguish between primary and secondary kinetic isotopic effects.
- (b) What are phase transfer catalysts? How are they helps in organic synthesis?
7. (a) Discuss the mechanism of the following conversion :



- (b) How will you convert *p*-bromonitrobenzene into *m*-bromobenzoic acid? Discuss the mechanism of the reaction.
8. (a) Discuss the aromaticity of metallocenes.
- (b) Briefly explain the stereo aspects of Diels- Alder reaction.
9. (a) Briefly explain the mechanism of Norrish Type I reaction.
- (b) Describe the applications of photochemistry.



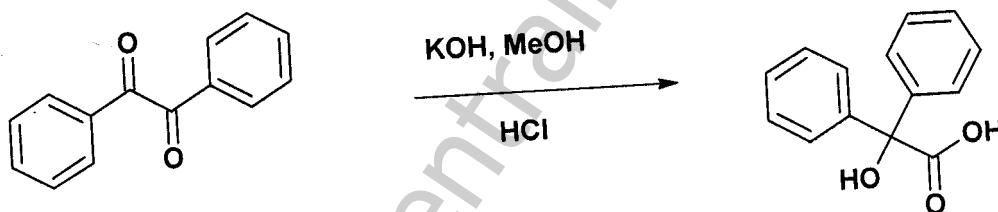
10. (a) Distinguish between primary and secondary metabolites in plants.
(b) Briefly explain the determination of carbon skeleton of alkaloid by Von Braun degradation method.

(5 × 5 = 25 Marks)

SECTION C

Answer any **three** questions. Each question carries **10** marks.

11. (a) Explain the various structural factors that influences the reactivity of an organic reaction.
(b) Explain the various methods of determining reaction mechanisms of organic reactions.
12. (a) Describe the mechanism of Wolf rearrangement.
(b) Discuss the mechanism of :



13. With suitable examples, explain the different types of pericyclic reactions.
14. (a) Describe the generation and reactions of singlet oxygen.
(b) Explain the mechanism of photo Fries rearrangement.
15. (a) Explain the biosynthesis of sterols from squalene.
(b) Explain the synthesis of quercetin.

(3 × 10 = 30 Marks)

