



MANAV RACHNA
UNIVERSITY

MANAV RACHNA UNIVERSITY
DEPARTMENT OF CHEMISTRY
"T3 Examination 2018"

Semester: IV
Subject: Advanced Heterocyclic Chemistry
Branch: Chemistry
Course Type: Core
Time: 3 Hrs
Max. Marks: 100

Date of Exam: 23.03.2018
Subject Code: CHH623-T
Session: I
Course Nature: Hard
Program: M.Sc. Chemistry

Signature: HOD/Associate HOD: *negh*

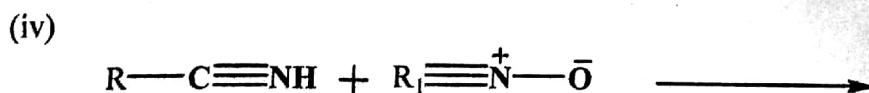
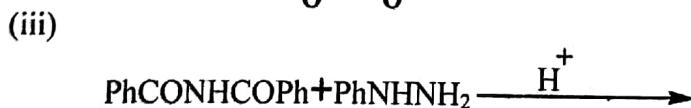
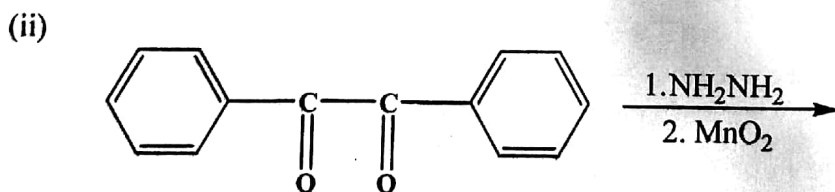
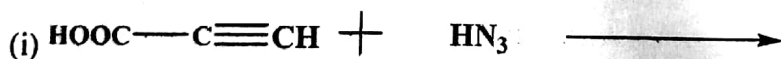
Note: Attempt six questions in all selecting two questions from each section.

PART A

- Q. 1. (a) Depict the mechanism for synthesis of aziridine by Hasner's method. 5
(b) Write a brief note on biological significance of diazenes. 5
- Q. 2. (a) What is application of Chichibabin reaction? 3
(b) Write a short note on pharmaceutical applications of benzo-1,3-azoles. 7
- Q. 3. (a) Compare the aromaticity order of isothiazole, pyrazole and isoxazole. Give reasons to support your answer. 5
(b) How will you synthesize azetidines using different starting materials? 5

PART B

- Q. 4. (a) What products are obtained in the following: 8



- (b) Discuss the biological role of purines in medicine and daily life. 6
- (c) Explain why in case of five membered heterocyclic more than two nitrogen, the electrophilic substitution becomes much difficult with increasing number N atoms? 6

Q. 5.(a) For the synthesis of various purines starting from uric acid, how will you obtain the following:

- (i) Theobromine 8
- (ii) Xanthine 8

(b) 1,2,4-oxadiazoles on reduction gives products depending on the reducing agent. Explain with examples. 4

Q. 6.(a) What products are obtained by electrophilic and nucleophilic substitutions in 1,2,3-triazoles, 1,2,4- triazoles, 1,2,5-oxadiazoles and 1,2,3-thiadiazoles? 12

(b) Give applications of oxadiazoles and thiadiazoles in field of chemistry. 8

PART C

Q. 7.(a) Discuss in detail the synthetic methods of azepine. 8

(b) How will you convert Dewar benzene into oxepin? How do oxepins react with acids and what product is obtained by its photoirradiation? 6

(c) How will you synthesize azocine by using cyclohexa-1,4-diene and pyridine dimers as starting materials. 4+2

Q. 8.(a) Discuss the various methods of synthesis of tellurophenes in detail. 8

(b) Discuss the pharmaceutical applications synthesis and of valium. 10

(c) What are the applications of McCormack reaction. 2

Q. 9.(a) Write a short note on the structural features of 7-membered heterocyclic systems i.e. azepin, oxepin and thiepin. 6

(b) Discuss the reactivity of thiepins. 8

(c) How boroles are synthesized. Discuss in detail. 6