Code No. : **889**

FACULTY OF SCIENCE

M.Sc. IV Semester Examination, April/May 2013

ORGANIC CHEMISTRY

Paper – III (403) : Advanced Heterocyclics Chemistry (Elective)

Time : 3 Hours] [Max. Marks : 80

***Note** : Answer **all** questions.*

SECTION – A **(4×8=32 Marks)**

(Short Answer Type)

1. a) Describe two methods for the preparation of oxivanes.

   b) Illustrate two reactions to explain the ring opening reactions of Thievans.

2. a) Describe the reactivity of 1, 2, 4 - triazole.

   b) Outline the Fisher synthesis of caffeine and theophylline.

3. a) Suggest a method for the synthesis of methyl oxepin – 4. 5– dicarboxylate.

   b) How many isomers of monocyclic diazepins are there ? Write the synthesis of any one of them.

4. a) Explain the aromaticity of Sydnones.

   b) Give a method for the synthesis of

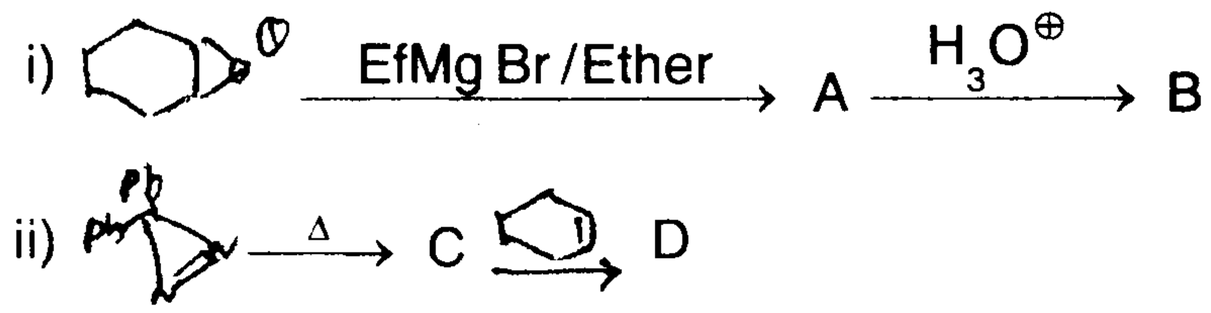
      i) Quinolozines ii) Benzimidazole.

SECTION – B **(4×12=48 Marks)**

(Essay type)

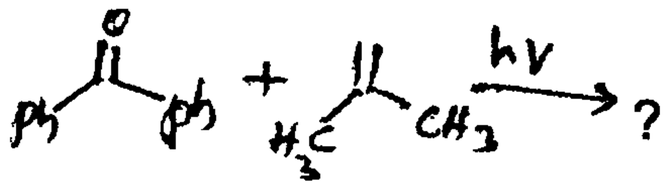
5. a) Explain different strains associated with non-aromatic 3 and 4 membered heterocyclics.

   b) Draw the structure of A, B, C and D in the following reactions.



c) Give the synthesis and reactivity of Diaziridines.

d) Predict the products in the following :

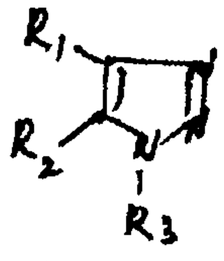
i)  ?

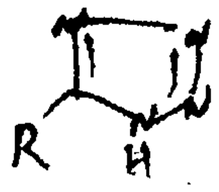
ii)  $(Eto)_3P$ ⟶ ?

iii)  $+Na_2S$ ⟶ ?

6. a) Discuss the synthesis and reactivity of 1, 3. 4 – Thiadiazoles.

b) Explain the products formed in the following reactions.

i)  $\xrightarrow[\Delta]{hv\ or}$?

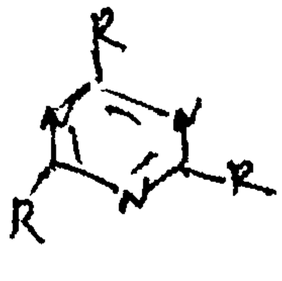
ii)  $\xrightarrow{hv}$?

iii)  $+RNH_2$ ⟶ ?.

OR

c) Give the synthesis of i) pteridine ii) 1, 3.4 – oxadiazole

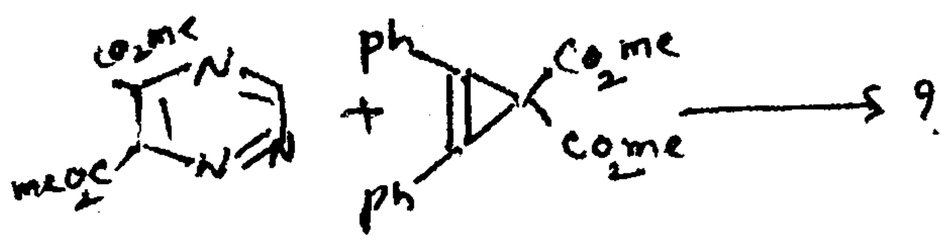
d) Predict the products in the following reactions. Explain their formation.

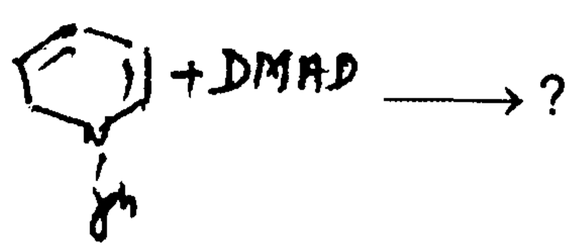
i)  ⟶ ?.

ii)  $\xrightarrow{R'NH_2}$?

7. a) Give the synthesis of
   i) 1H – 1, 2 – benzodiazepine
   ii) Selenophenes

b) Predict the products in the following reactions. Explain their formation :

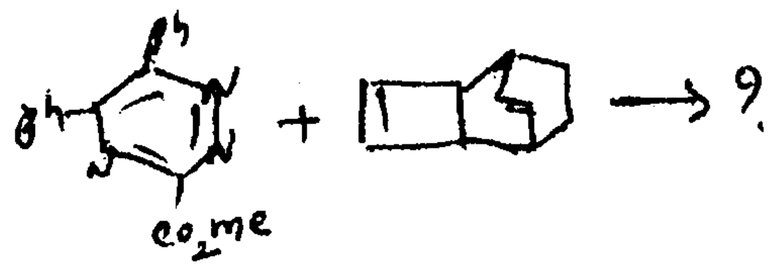
i) 

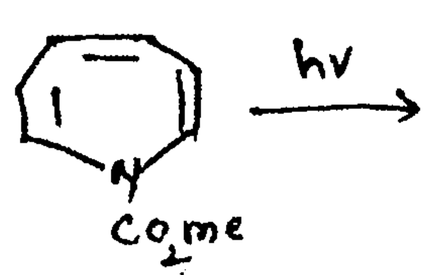
ii) 

OR

c) Write the synthesis of i) Boroles ii) Benzoazepins

d) Write the products in the following reaction. Explain their formation.

i) 

ii) 

8. a) Explain a each method for the synthesis of Benzimidazole benzoxazole and benzothiazole.

b) Discuss the synthesis and reactivity of Indolizines.

OR

c) Explain the aromaticity and reactivity of pyridine N-Oxide.

d) What are mesoionic compounds ? Give such two examples mention their characteristics.