



**IV Semester M.Sc. Degree Examination, September/October 2022
(Freshers and Repeaters) (CBCS Scheme 2016 – 17 Syllabus)**

**APPLIED CHEMISTRY
Synthetic and Natural Products Chemistry**

Time : 3 Hours

Max. Marks : 70

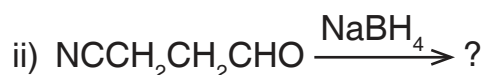
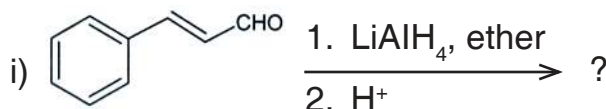
Note : i) Answer Part – A and **any four** questions from Part – B.
ii) Figures to the **right** indicates marks.

PART – A

1. Answer **all** the following subdivisions : **(9×2=18)**

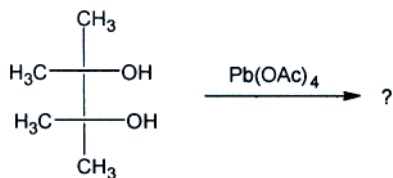
a) Define hydrogenolysis with an example.

b) Predict the product in the following reactions :

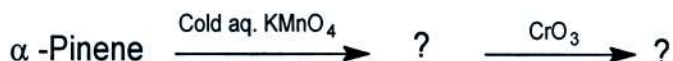


c) What are alkaloids ? Give their classifications.

d) Write the product and propose the mechanism :



e) Give the product(s) in the following reaction :



f) Define isoprene rule and special isoprene rule.

g) Give the name and structure of hydrocarbon obtained when sterols are heated with Se at 360 °C .

h) Draw the structures of cortisone and cortisol.

i) Account on Blanc's rule.

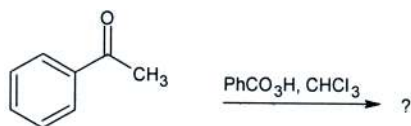


PART – B

Answer **any four full** questions :**(4×13=52)**

2. a) Sketch the mechanism of Wolff-Kishner reduction.

b) Predict the product with possible mechanism :



c) Give an account on benzylic and allylic halogenations.

(3+4+6=13)

3. a) Outline the synthesis of ephedrine.

b) Account on any two reactions of α -santonin.

c) Write a note on general methods of structure elucidation of alkaloids.

(4+4+5=13)

4. a) How was the positions of hydroxyl and double bond in cholesterol established ?

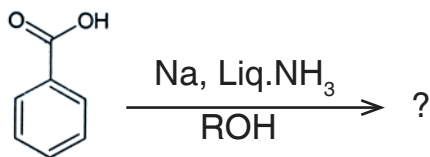
b) Write a note on steroidal oral contraceptives.

c) Discuss the synthesis of aldosterone by photochemical method.

(4+4+5=13)5. a) Explain oxidation reactions using KMnO_4 as an oxidising agent.

b) With suitable examples, discuss the reduction reactions using diborane.

c) Give the product and propose the mechanism :

(5+4+4=13)

6. a) Give any four reactions of morphine.

b) Comment on structure and synthesis of menthol.

c) Account on methods of structure determination of terpenoids.

(4+4+5=13)

7. a) Discuss the chemistry of Vitamin-D.

b) Explain the importance of Oppenauer oxidation in steroid chemistry.

c) Describe the chemistry of testosterone.

(4+4+5=13)