PB **5242**

Roll No. _____ **Total No. of Pages: 04**

M.Sc. (Semester - III) Examination - Dec. - 2025
CHEMISTRY
PAPER - 3.3 CHEM
Organic Synthesis
(Organic Chemistry Specialization)

Time Allowed: Three Hours **Maximum Marks: 70**
Min. Marks: 28

This question paper contains two sections as under

Section - A **(खण्ड - अ)** **Max. Marks-20**
This section will have 10 questions, having 02 questions from each unit with no internal choice. Answer in about 20 words. All questions will have equal marks. (02×10=20)

Section - B **(खण्ड - ब)** **Max. Marks-50**
This section will have 10 questions, having 02 questions from each unit, one question to be attempted from each unit. Words limit approximately 400-500 words. Questions may have sub divisions. All questions will have equal marks. (10×05=50)

Section - A

Q.1 2 x 10 = 20

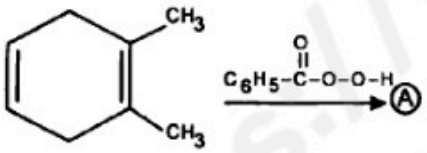
(i) Define synthons and Synthetic equivalent.

(ii) What is functional group inter conversion. Give one example.

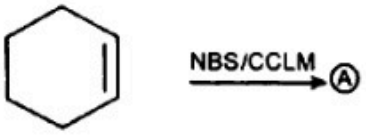
(iii) Define stereoselectivity with suitable example.

(iv) Define regioselectivity with suitable example.

(v) Complete the following reaction.

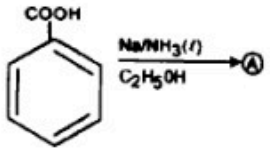


(vi) Complete the following reaction:

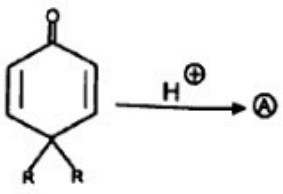


(vii) Which catalyst used for Homogeneons catalysis of alkene,. Write their name and structure.

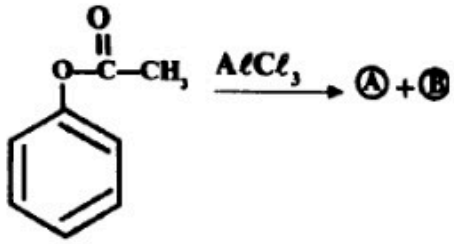
(viii) Complete the following reaction :-



(ix) Complete the following reaction :



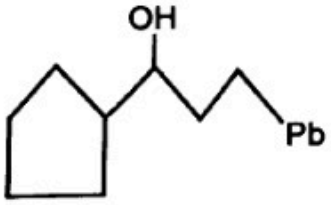
(x) Complete the following reaction :



Section - B

Unit - I

(i) Outline the retrosynthesis analysis and synthesis of the following molecule. 4



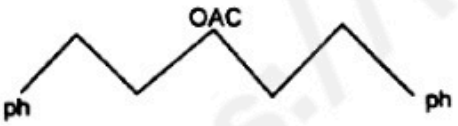
(ii) Write short notes on -

(a) Reversal of Polarity 3

(b) Amine synthesis 3

OR

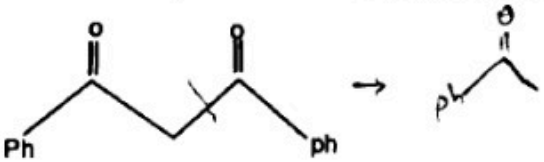
(i) Outline the retrosynthesis analysis and synthesis of the following molecule. 3



(ii) What are protecting groups. Give the various methods for protecting to (a) Alcohol and (b) Amine group. 1+3+3

Unit - II

(i) Give the retrosynthesis outline and synthesis of following moleule. 4



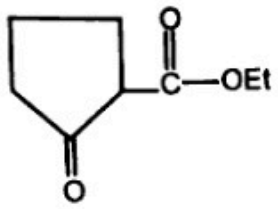
(ii) Write short notes on -

(a) Michael Addition 3

(b) Alkene Synthesis 3

OR

(i) Give the retrosynthesis outline and synthesis of the following mulecule 4



(ii) Write short nots on -

a) Robinsen Annellation 3

b) Use of Acetylenes in organic synthesis 3

Unit - III

4. (i) Explain th oxidation of primary alcohol to aldehydes by followng methods with suitable mechanism-

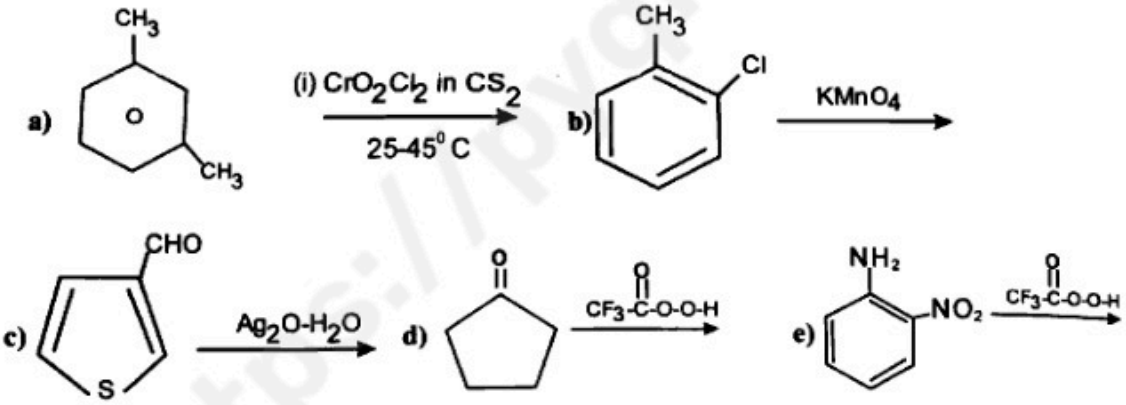
a) Dimethyl Sulfoxide 3

b) Chromium (VI) Oxide 3

(ii) Explain oxidation of alkene with thallium nitrate. 4

OR

Complete the following reactions - 2x5=10



Unit - IV

5. (i) Explain the reduction of carbonyl compound to hydrocarbons by following methods

a) Clemmensen method 3

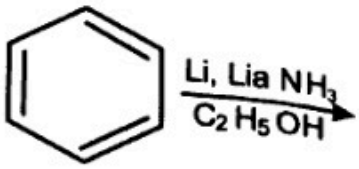
b) Wolff - kishner method 3

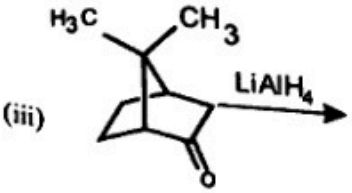
(ii) Explain hydrogenolysis with suitable example. 4

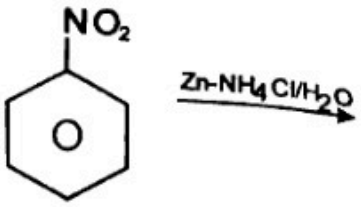
OR

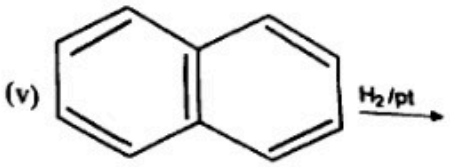
Complete the following reactions : 2x5=10

(i) $CH_3\text{-}CH_2\text{-}C\equiv C\text{-}CH_2\text{-}CH_3 \xrightarrow[H_2]{Na+NH_3(l)}$

(ii) 

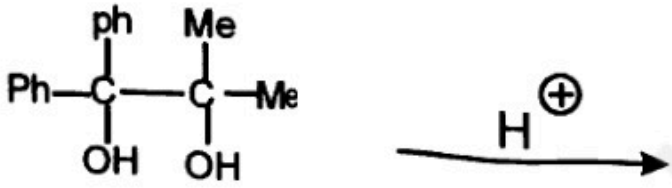
(iii) 

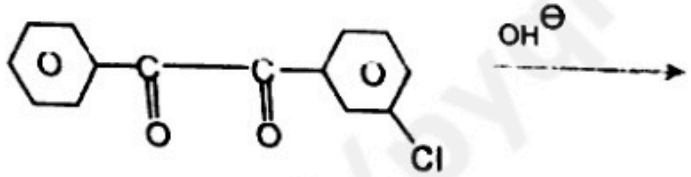
(iv) 

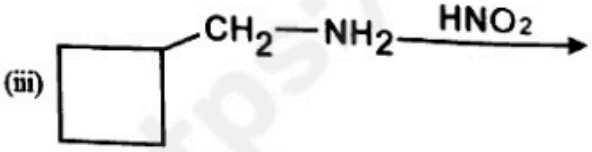
(v) 

Unit - V

(i) Complete the following rearrangement with suitable mechanism. 4

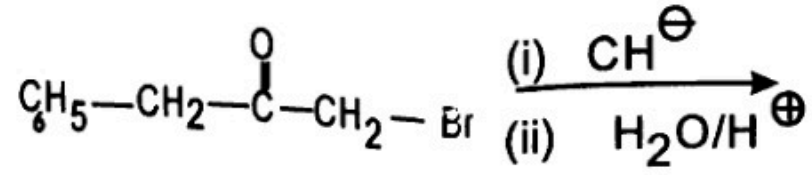


(ii) 
 4

(iii) 
 2

OR

(i) Complete the following rearrangement with suitable mechanism :

a) 

OR

(ii) Write short notes on -

a) Huffman Rearrangement 3

b) Wittig rearrangement 3