This question paper contains **6** printed pages]

LB—158—2023

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Third Semester) EXAMINATION

APRIL/MAY, 2023

CHEMISTRY

Paper-XVII [OCH-513]

(Organic Synthesis)

(Tuesday, 9-5-2023) **Time : 2.00 p.m. to 5.00 p.m.**

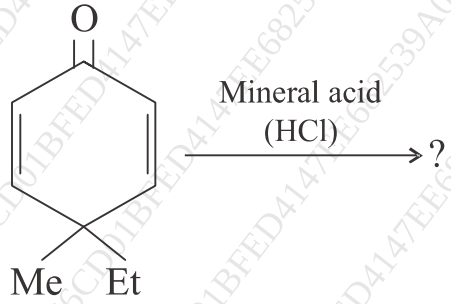
Time—Three hours *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

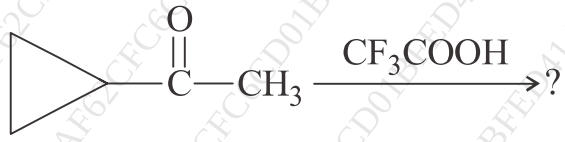
(*ii*) Figures to the right indicate full marks.

1. Predict the product(*s*) with appropriate mechanism (any *three*) : 15

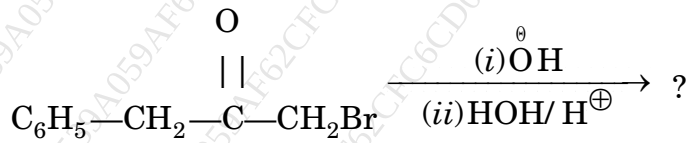
(*a*)



(*b*)



(*c*)



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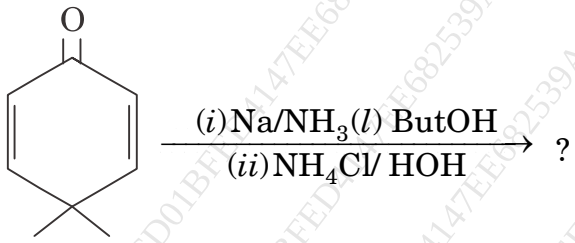
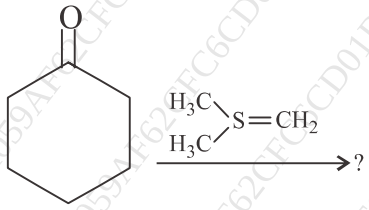
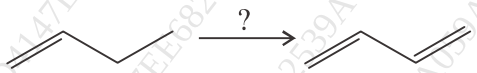
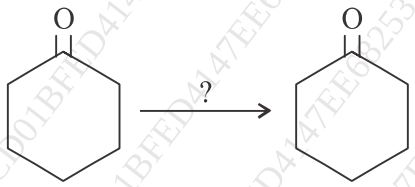
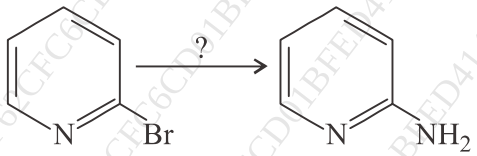
(*d*) 

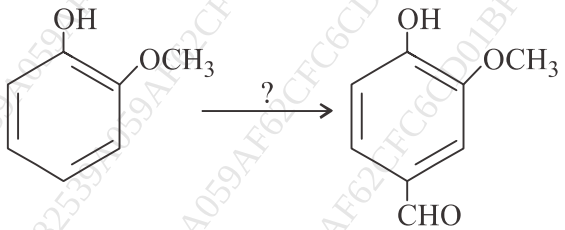
(*e*) 

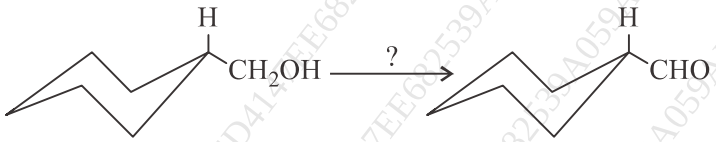
2. Select the suitable reagents for the following conversions and give appropriate mechanism (any *three*) : 15

(*a*) 

(*b*) 

(*c*) 

(*d*) 

(*e*) 

3. Solve the following :

(*a*) Discuss the following giving suitable example with mechanism : 8

(*i*) Semipinacol rearrangement

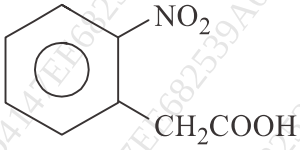
(*ii*) Hunsdiecker reaction

Or

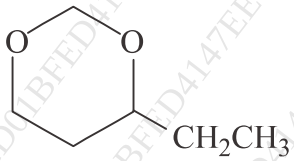
(*i*) Wolf Kishner reduction

(*ii*) Swern oxidation.

(*b*) How will you prepare the following using ? 7

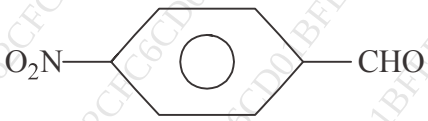
(*i*) 

Wolf rearrangement

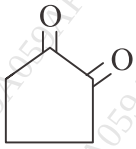
(*ii*) 

Prins reaction

Or

(*i*) 

by DIBAL

(*ii*) 

by SeO_2

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4. Solve the following : 8

(*a*) Discuss the following giving suitable example with mechanism :

(*i*) Iodolactonisation Rearrangement

(*ii*) 1, 3 Dithiane reagent.

Or

(*i*) Clemmensen reduction

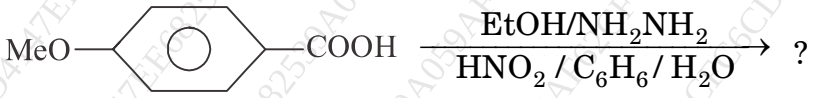
(*ii*) Ullmann reaction.

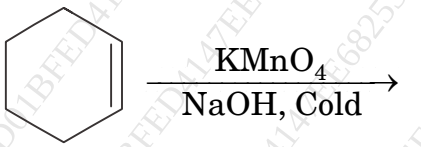
(*b*) Explain the following : 7

(*i*) Woodward and Prevost hydroxylation with mechanism.

(*ii*) Phosphorus ylide with mechanism.

Or

(*i*) 

(*ii*) 

5. (A) Select and write the *correct* answer of the following : 5

(*i*) Which of the following is Jones oxidizing agent ?

(*a*) CrO_3 + Pyridine

(*b*) CrO_3Py + CH_2Cl_2

(*c*) CrO_3(aq) + Pyridine

(*d*) CrO_3 + aq.H_2SO_4 + Acetone

(*ii*) $C_6H_5-\overset{\overset{O}{\|}}{C}-CH_3 \xrightarrow{?} C_6H_5CH_2CH_3$

in above reaction the reducing agent is :

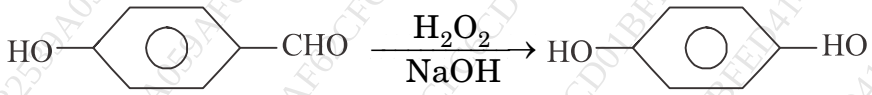
(*a*) Zn–Hg/HCl (b) H_2N-NH_2

(*c*) $NaBH_4$ (d) All of these

(*iii*) Neber rearrangement involves the formation of intermediate :

(*a*) Carbocation (b) Carbanion ion

(*c*) Nitrene (d) Azirine

(*iv*) 

The above reaction is :

(*a*) Dakin reaction (b) Gabriel synthesis

(*c*) Darzen reaction (d) Shapiro reaction.

(*v*) Which of the following is stabilized ylide ?

(*a*) $Ph_3\overset{\oplus}{P}-\overset{(-)}{C}H_2$

(*b*) $Ph_3\overset{\oplus}{P}-\overset{(-)}{C}H-\overset{\overset{O}{\|}}{C}-OR$

(*c*) $Ph_3\overset{\oplus}{P}-\overset{(-)}{C}H-\overset{\overset{O}{\|}}{C}-OCH_2Ph$

(*d*) Both (*b*) and (*c*).

P.T.O.

(B) Write short notes on the following (any *two*) : 10

(*a*) Enamine Synthesis

(*b*) Sazuki reaction (coupling)

(*c*) Wilkinson catalyst—TBTH.