

[6]

Ex/Int/Ch/VI/18/19(Old)

INTER B.Sc. EXAMINATION, 2019

(1st Semester)

CHEMISTRY (HONOURS)

ORGANIC CHEMISTRY

PAPER - VI

Time : Two hours

Full Marks : 50

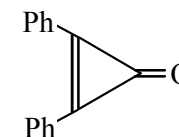
(25 marks for each group)

Use a separate answerscript for each group.

GROUP - A

1. Attempt *all* the questions :

a) Compare the C = O bond length in $\text{Me}_2\text{C}=\text{O}$ and



2½

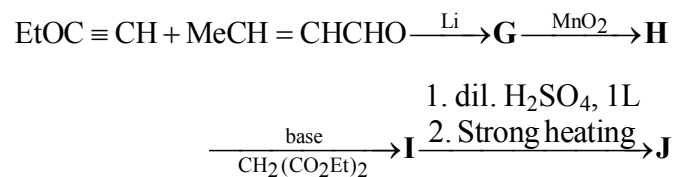
b) Most alkyl bromides are water insoluble, where as cycloheptatrienyl bromide is readily soluble in water – explain.

2½

c) Arrange the following compounds in decreasing order of ease of their nucleophilic substitution and justify your answer.

2½

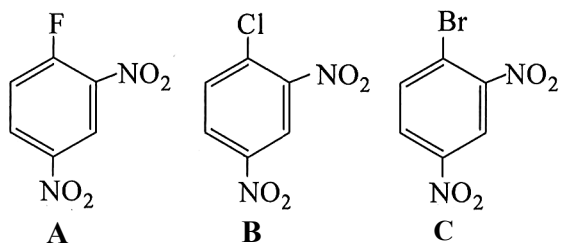
b)



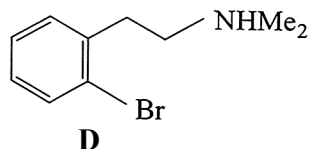
Write the structure of the products (G to J) in the above sequence of reactions. 2

[Turn over

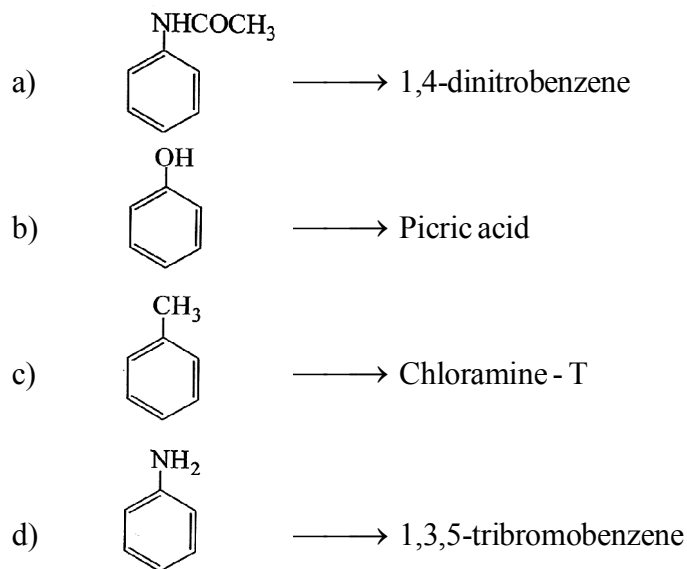
[2]



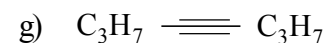
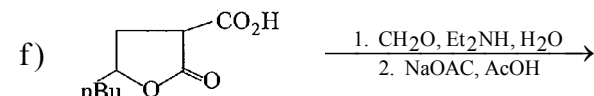
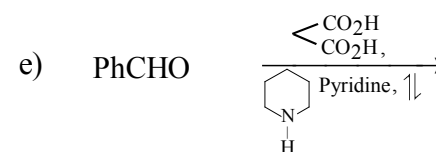
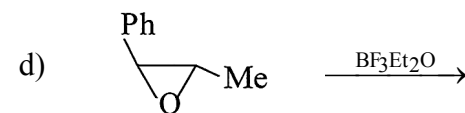
- d) Predict the product when the amine **D** is treated with NaNH_2 in liq. NH_3 . Give the mechanism of the following reaction. $2 \frac{1}{2}$



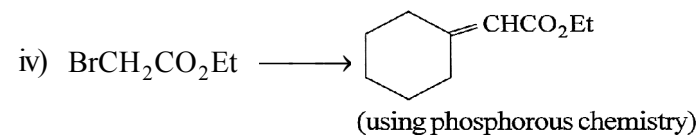
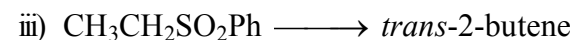
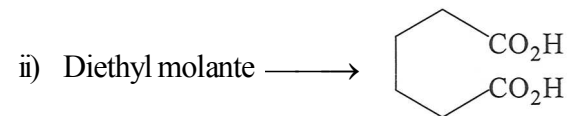
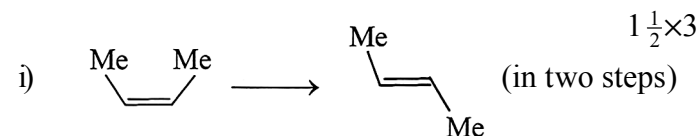
2. How do you carry out the following transformations :
(Mechanism not required) 2×4



[5]



6. a) Carry out the following transformations (*any three*) :



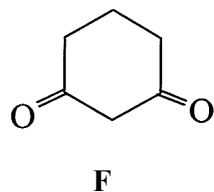
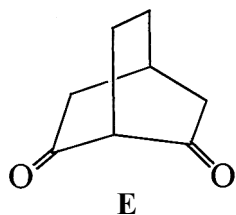
[Turn over

[4]

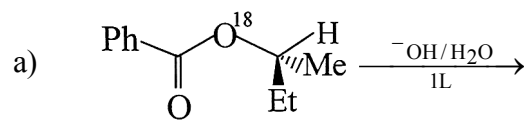
- d) Explain, why but-3-en-2-one reacts differently when treated separately with (i) $\text{NaBH}_4\text{-MeOH}$ and (ii) $\text{NaBH}_4\text{-CeCl}_3, \text{MeOH}$.

Also write the mechanism of the second reaction. $2\frac{1}{2}$

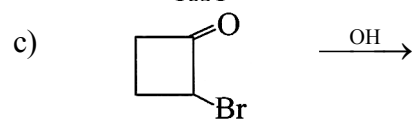
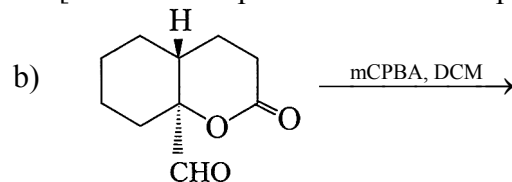
- e) Explain, why compound **E** is not soluble in aqueous NaOH and does not give any coloration with FeCl_3 but compound **F** responds to both. 1



5. Predict the product(s) mentioning major/minor with proper stereochemical outcome wherever applicable and depict the mechanism (*any five*): 2×5

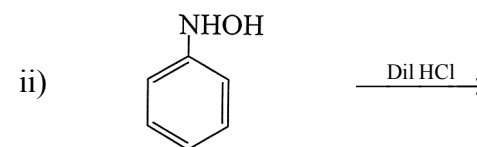
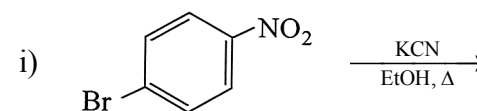


[to show isotope distribution in the product(s)]



[3]

3. a) The nitration of phenylboronic acid, PhB(OH)_2 , with mixed acid at -30°C gives predominantly the *m*-derivative. But, with $\text{HNO}_3\text{-Ac}_2\text{O}$, the predominant product is *o*-derivative. Suggest explanation. 3
- b) Predict the products in the following reactions and give the mechanism of the following reactions. $2+2$



GROUP - B

4. a) Explain, why butan-2-one behaves differently toward bromination in acidic and in basic condition. 2
- b) Explain, why Cl_3CCHO does not undergo cannizaro reaction inspite of not having any $\alpha\text{-H}$. $1\frac{1}{2}$
- c) Write the mechanism of synthesis of acid chloride using oxalyl chloride and *N,N*-dimethylformamide (catalytic amount). $1\frac{1}{2}$

[Turn over