

Ex/B.Sc./Chem/H/22/VIII/A/61/2019(Old)

INTER B.SC. EXAMINATION, 2019

(2nd Semester, Old Syllabus)

CHEMISTRY (HONOURS)

ORGANIC CHEMISTRY

PAPER - IX

Time : Two hours

Full Marks : 50

(25 marks for each Group)

Use a separate answerscript for each Group

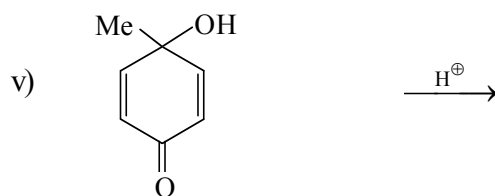
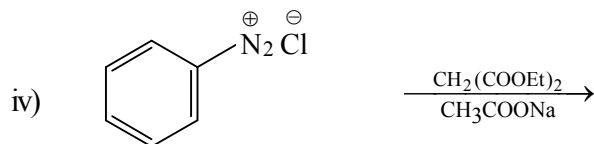
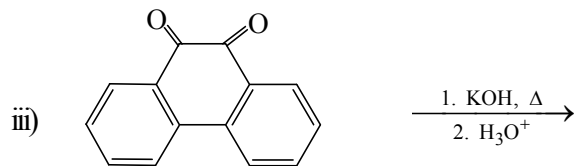
GROUP : A

1. Explain the following observations : (*any three*) 2×3
 - a) Coupling reactions of an aromatic diazonium salt with phenol(s) occur in faintly alkaline solution while for any amine (s), it is favoured in faintly acidic medium.
 - b) Claisen rearrangement of an aromatic allyl ether proceeds in an intramolecular fashion.
 - c) Stobbe condensation is not specifically confined to succinic ester.
 - d) Oxidation of 2, 4, 6-tri-*t*-butyl phenol in benzene gives a dark-blue solid while 2,6-di-*t*-butyl phenol affords a red compound.

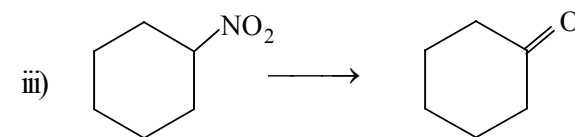
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[2]

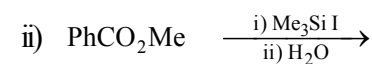
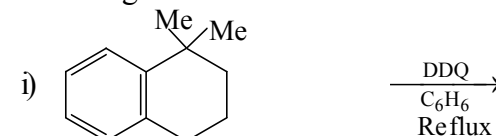
2. Mechanistically predict the products in the following reactions. (*Attempt any two*) 3×2



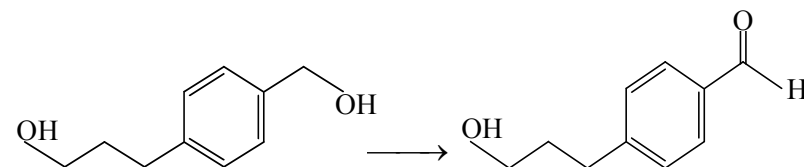
[5]



7. a) Predict the product(s), and explain the mechanism of the following reactions: 2+2



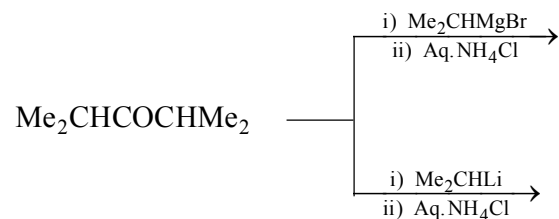
- b) How can you achieve the synthesis of dipeptide Gly-Ala? 3
 c) What is Reformatsky reaction? Can you use magnesium instead of zinc? Explain. 2
 d) Mention a suitable oxidizing agent for the following synthetic transformation. 1



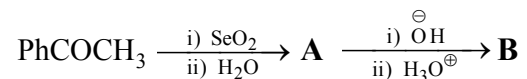
- e) What will happen when phenol reacts with diazomethane? 1

[4]

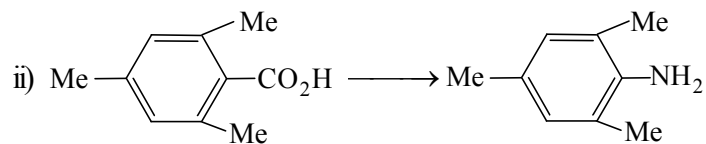
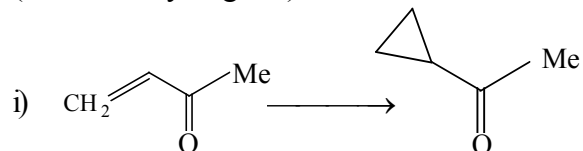
- b) Predict the product(s) of the following reactions and explain with plausible mechanism. 3




- c) Write down the product(s) **A** and **B** of the following reactions. 2



- d) What is Gilman reagent? How is this reagent prepared? What will happen when Gilman reagent is treated with methyl vinyl ketone? Suggest the mechanism of this reaction. $\frac{1}{2} + 1 + 1 + 1 \frac{1}{2}$
- e) How can you carry out following transformation? (mention only reagents) 1+1+1



[3]

3. Why do we see the orange colour of an azo dye? What product would you obtain if phenol is heated with phthalic anhydride in the presence of conc. H_2SO_4 ? The colour of the product is pH dependent – Justify the answer. $1 + 1 \frac{1}{2} + 1 \frac{1}{2}$
4. i) Give the outline for the conversion of  ii) What do you understand by the term “double bond fixation of naphthalene”? $2 \frac{1}{2} + 1 \frac{1}{2}$
5. i) *p*-Toluidine reacts with benzene diazonium chloride to form a compound which on boiling with dil. H_2SO_4 gives four products (excluding nitrogen). Write products with appropriate mechanism. ii) How can you chemically distinguish between *N*-methyl-aniline and *N,N*-dimethyl aniline. 3+2

GROUP : B

6. a) What will happen when ${}^t\text{BuOH}$ is treated with acetonitrile in the presence of cold conc. H_2SO_4 followed by hydrolysis? Explain. 2

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