SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
B.Sc.(Chemistry) END SEMESTER EXAMINATIONS NOVEMBER -2023
SEMESTER - III
22UCHCT3005 - Organic Functional Groups and Heterocyclic Compounds

Total Duration : 2 Hrs 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

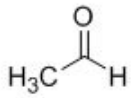
1. a) How will you distinguish primary, secondary and tertiary amines through Hinsberg test? [3]
   b) Describe any two methods for the preparation of nitroalkanes. [2]

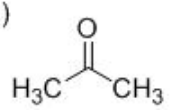
2. Provide a method of preparation for the following heterocycles with mechanism.
   a) Pyrrole b) Pyridine [2.5+2.5]

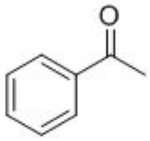
3. Illustrate the following reactions with suitable examples and mechanism [2.5+2.5]
   i) Bouvaelt-Blanc Reduction ii) Friedel-Craft alkylation of phenols

4. Outline the mechanistic details of the following reactions. [2.5 + 2.5]
   i) Michael addition ii) Haloform reaction

5. a) Provide a synthetic route for the preparation of the following carbonyl compounds. [3]

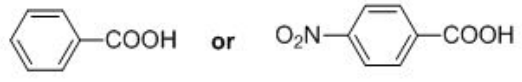
i) 

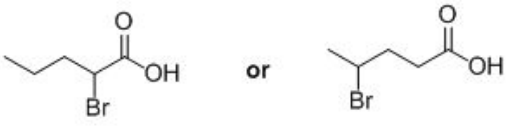
ii) 

iii) 

   b) How does the Crossed-Cannizaro reaction differ from canizaro reaction? Describe the advantage of Crossed-Cannizaro reaction. [2]

6. a) Which compound in the following pairs is more acidic? Explain why? [1+1]

(i) 

(ii) 

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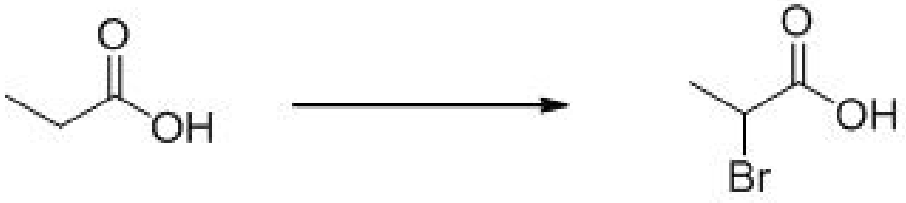
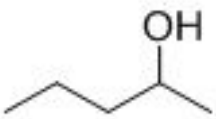
b) Oxalic acid is stronger acid than formic acid. Explain why? [1]

c) Effect the following conversion. [2]



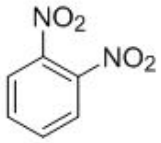
7. a) Starting from 1-pentene, how would you prepare the following alcohols. [2]

i) 

ii) 

b) Explain why phenols are more acidic than aliphatic alcohols. [3]

8. How would you achieve the synthesis of the following isomers of dinitrobenzene? (Provide the synthetic route for each of the isomer) [2+1+2]

i) 

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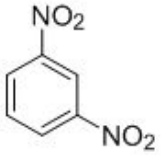
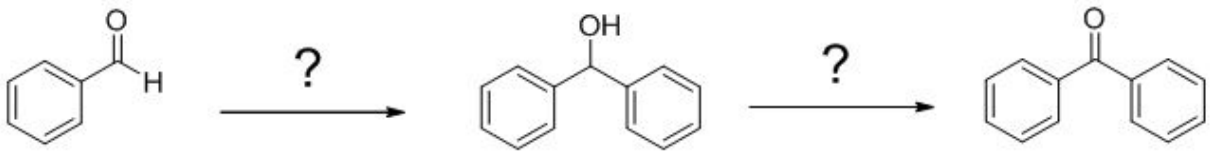
iii) 

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. a) Identify the missing reagents in the following conversion. [2]



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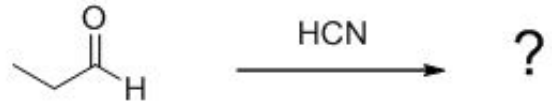
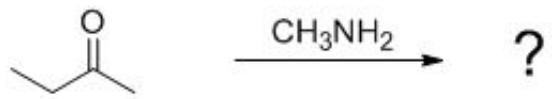
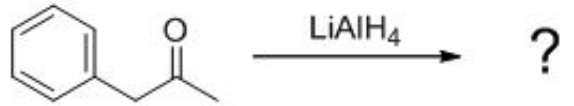
b) Predict the products for the following reactions. [3 x 1]

i) 

(ii) 

(iii) 

c) Describe the following reactions with the appropriate mechanism. [2.5+2.5]

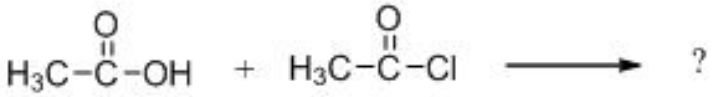
i) Reformatsky reaction ii) Wittig olefination

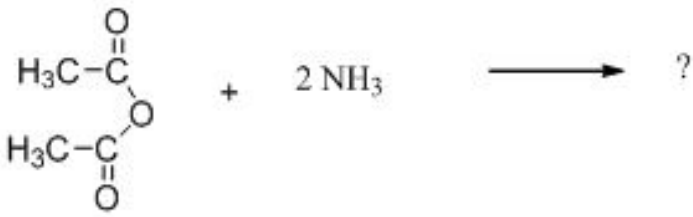
10. a) Provide a preparative method for Oxalic acid. [2]

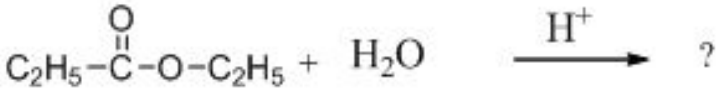
b) Illustrate the acid and alkaline hydrolysis of ester with the appropriate mechanism and examples. [4]

c) Predict the products formed in the following reactions. [4 x 1 = 4]

(i) 

(ii) 

(iii) 

(iv) 

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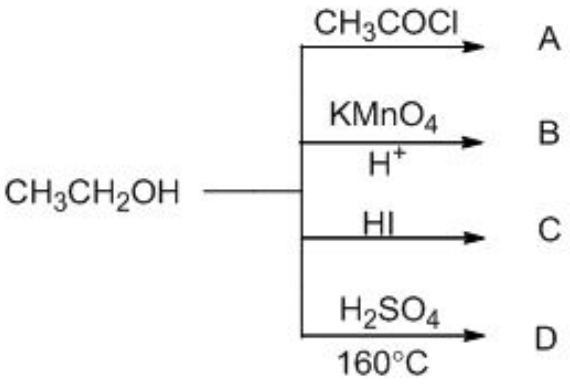
11. a) Predict the product for the following reactions. [4 x 1 = 4]



b) Explain the following reactions with suitable examples and mechanism. [3+3]

(i) Houben-Hoesch Reaction (ii) Riemer-Tiemann reaction

12. a) Provide thee products for the reduction of nitrobenzene in following media.[3]

(i) Acidic medium (ii) Neutral iii) Alkaline medium

b) Describe the synthetic use of dizomethane. [2]

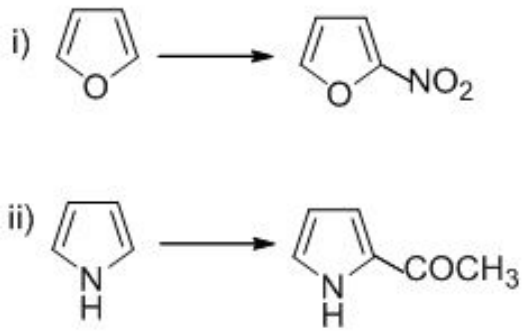
c) Explain the following reactions. [2.5+2.5]

i) Sandmeyer reaction ii) Gomberg reaction

13. a) Compare and discuss the basicity of Pyrrole, Pyridine and Piperidine. [4]

b) Describe the synthesis of quinolone. [4]

c) Effect the following conversion. [2]



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