



DOON UNIVERSITY, DEHRADUN
 End Semester Examination, Third Semester, 12 December 2016
 Department of Chemistry, School of Physical Sciences (SoPS)
 Integrated M.Sc. 5 Years (Chemistry)

Course: Organic Chemistry-II

Course Code: CYC-203

Time Allowed: 3 Hours

Maximum Marks: 30

Note: Attempt All Questions from Sections A, B and C.

SECTION: A

(Marks: 6)

- [1] Explain why must ethanoyl chloride be protected from atmospheric moisture during storage. [1]
- [2] What is the characteristic reaction of the derivatives of carboxylic acids? Arrange the derivatives of carboxylic acids in decreasing order of reactivity towards this particular reaction? [1]
- [3] Propanoic acid has a boiling point of 141°C which is considerably higher than that of butan-1-ol (117°C), although they have the same molecular mass. Explain why. [1]
- [4] Arrange the following compounds in decreasing order of solubility in water: [1]
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$, $\text{CH}_3\text{CH}_2\text{COOCH}_3$ and CH_3COOH
- [5] Explain why alkyl sulphonic acids are more acidic than the corresponding carboxylic acid. [1]
- [6] Why cannot diphenyl ethers be prepared by dehydration of phenol with conc. H_2SO_4 ? [1]

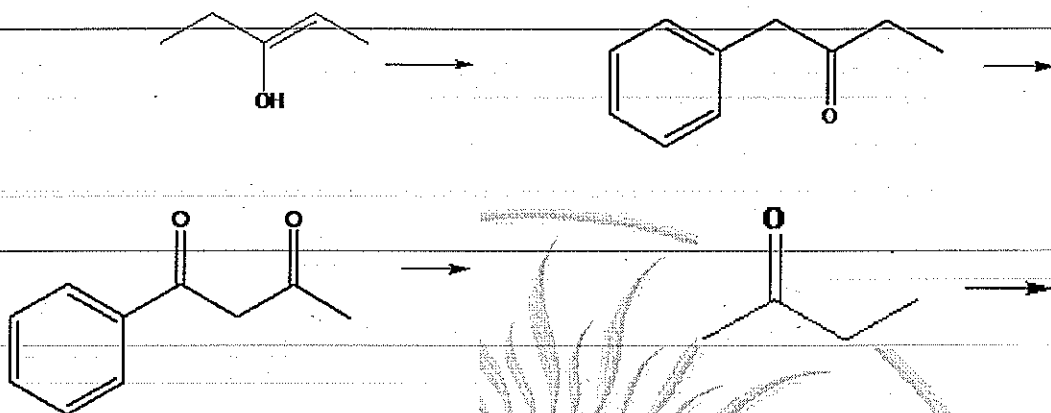
SECTION: B

(Marks: 12)

- [1] Write the chemical equations for the acid-catalyzed and alkali-catalyzed hydrolyses of each of the following compounds: (i) Ethyl butanoate and (ii) Propanamide (iii) Benzoyl chloride [3]
- [2] (i) How does an Enolate function as an ambident nucleophile? [1]

(ii) Why is the *alpha*-Hydrogen acidic in carbonyl compounds? [1]

[3] Draw the tautomers of the following compounds? [2]



[4] Write the structures of the possible products formed after the reaction between RCOOH and R'COOH in presence of heat and P₄O₁₀? [2]

[5] Explain why ethanol is a liquid while ethane is a gas at room temperature. [1]

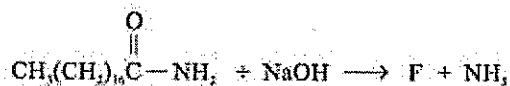
[6] How can aspirin be prepared from benzene? [2]

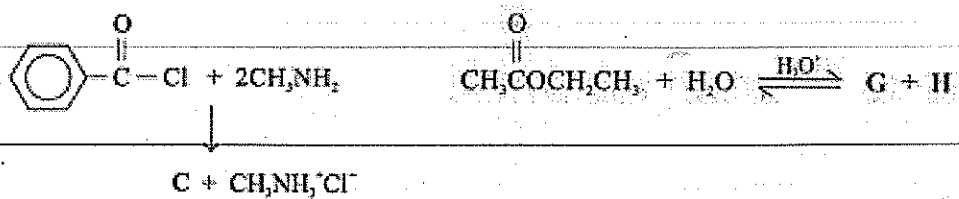
SECTION: C

(Marks: 12)

[1] (a) Outline how you can separate a mixture of butanone (b.p. = 79.6 °C) and 1-chlorobutane (b.p. = 78.5°C) in ether. [2]

(b) Draw the structural formulae of the missing compounds A to H in following reactions? [2]





(c) Why are esters less acidic than aldehydes and ketones? Explain. [2]

[2] (a) Explain the *Dieckmann Cyclization*, *Hoffman Bromamide Degradation* and *Curtius Rearrangement*. [1+1+1]

(b) Explain the following name reactions: *Bouveault Blanc reduction*, *Pinacol-Pinacolone rearrangement* and *Fries rearrangement*. [1+1+1]

