

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: B.Sc.(H) Chemistry
Program: Organic chemistry II
Course Code: CHEM 2002

Semester: III
Time: 03 hrs.
Max. Marks: 100

Instructions: Read the instructions given below carefully:
All questions are compulsory.

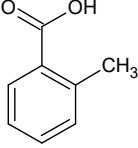
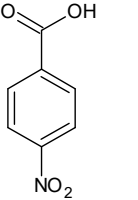
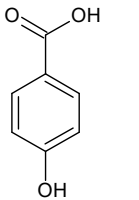
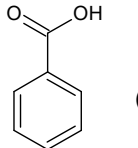
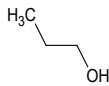
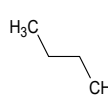
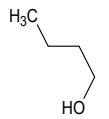
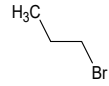
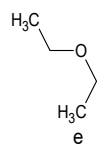
SECTION A

Instructions:

- 1. Each Question will carry 4 Marks**
- 2. Complete the statement /select the correct answer(s)**
- 3. Answer should be short, fill in blank, true or false.**
- 4. You have to very careful to write the answer.**

S. No.		Marks	CO
Q 1	a) Primary alcohol can be obtained by reaction of Grignard's reagent with b) Presence of electron withdrawing groupacidic strength of phenols. c) Salicylaldehyde can be synthesized by a name reaction..... d) Secondary alcohol can be obtained by reaction of Grignard's reagent with	4	CO2
Q 2	Suggest catalyst for the following reactions a) Clemmensen reaction b) Wolff-Kishner reaction c) Meerwein Ponnendorf Verley reaction d) Bouvaelt-Blanc Reduction	4	CO1
Q 3	Give reason a) Why moderately acidic condition for nucleophilic addition reaction of ammonia derivatives on carbonyl compound is required? b) Why polar aprotic solvent for SN2 reaction is required?	4	CO3
Q 4	Select from the list of compounds that will undergo below mentioned reactions	4	CO2

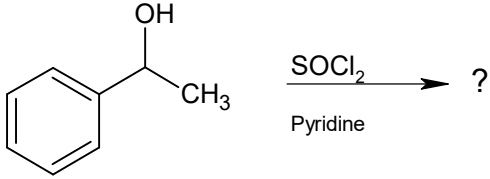
	<p>List:</p> <p>i) Acetaldehyde ii) Benzaldehyde iii) Acetone iv) Formaldehyde</p> <p>Reactions</p> <p>a) Aldol condensation b) Cannizzaro reaction</p>		
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Q 5	<p>Arrange in increasing order of mentioned property</p> <p>i)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>a</p> </div> <div style="text-align: center;">  <p>b</p> </div> <div style="text-align: center;">  <p>c</p> </div> <div style="text-align: center;">  <p>d</p> </div> </div> <p>(Acidic strength)</p> <p>ii)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>a</p> </div> <div style="text-align: center;">  <p>b</p> </div> <div style="text-align: center;">  <p>c</p> </div> <div style="text-align: center;">  <p>d</p> </div> <div style="text-align: center;">  <p>e</p> </div> </div> <p>(Solubility in water)</p>	4	CO1
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SECTION B

Instructions:

1. Each question will carry 10 marks
2. There is an internal choice in question 4.
3. Write short/brief notes of 1-2 page answer.
4. Write suitable reactions, to justify your answer as well as to score higher marks.

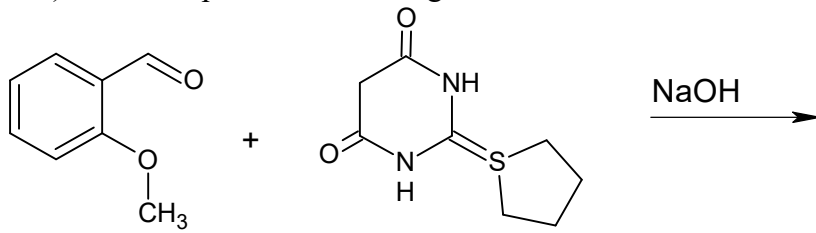
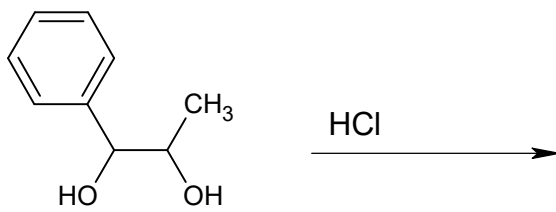
Q 1	<p>How will you synthesize</p> <p>a) Acetophenone from Benzene b) Butan-2-ol from Acetaldehyde c) 2,4-dinitrophenylhydrazine d) Benzyl alcohol and Benzoic acid from Benzaldehyde</p>	10	CO1
Q 2	<p>Propose suitable mechanism for the following reaction and also explain the stereochemistry.</p> <div style="text-align: center;">  </div>	10	CO3

Q 3	<p>a) Which is more reactive for nucleophilic addition reaction. Give reasoning for your choice Benzaldehyde or Acetaldehyde.</p> <p>b) Which is more acidic, Oxalic acid or Ethanoic acid and why?</p> <p>c) What will happen if we heat adipic acid followed by the reaction of product with ammonia?</p>	3+3+4	CO1
Q 4	<p>A Russian chemist proposed a reaction for synthesis of beta hydroxyl ester from aldehydes/ketones and alpha haloester. Name and explain the reaction with suitable mechanism.</p> <p style="text-align: center;">OR</p> <p>A German chemist proposed a reaction for synthesis of amines from amides. Name and explain the reaction with suitable mechanism.</p>	10	CO2

SECTION C

Instructions:

1. Each Question is of 20 marks
2. Write long answer.
3. Draw the neat diagram, to justify your answer as well as to score higher marks.
4. Internal choices is there attempt any one of them in question 2

Q 1	<p>i) Complete the following reaction with suitable mechanism</p>  <p>ii) Discuss two methods for oxidation of diols. Write complete reactions with suitable mechanism.</p>	10+10	CO3
Q 2	<p>i) Compound 'A' of molecular formula C₆H₆ on reaction with an acid chloride 'B' gives C₉H₁₀O 'C', which on reaction with alkaline hydrazine gives C₉H₁₂ 'D'. 'D' reacts with methyl chloride in the presence of Lewis acid gives two isomers 'E' and 'F'. Both the isomers on oxidation with alkaline KMnO₄ give acids (C₈H₆O₄) 'G' and 'H', one of which produce anhydride on heating. Deduce the structures from 'A' to 'H' with proper reasoning.</p> <p>ii) Complete the following reaction and explain with suitable mechanism</p> 	20	CO2

OR

i) A compound with molecular formula C_6H_6 undergoes reaction with acetyl chloride in presence of anhydrous Lewis acid to give A. A on reaction with ethanolic KOH gives B. A also reacts with $LiAlH_4$ to give C. C on reaction with conc. H_2SO_4 and heating gives D. D on reaction with bromine in CCl_4 gives E. E on reaction with aqueous KOH gives F. What will be the product (G) if F is treated with an acid? Write structures and reaction to solve the road map.

ii) Complete the following reaction and explain with suitable mechanism

