

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES
ACADEMIC YEAR 2022/2023 – SEMESTER 02



BACHELOR OF PHARMACY HONOURS
BSU3341 – PHARMACEUTICAL CHEMISTRY II
FINAL EXAMINATION-LEVEL 3
DURATION: 3 HOURS

DATE: 20th September 2023

TIME: 9.30 AM-12.30 PM

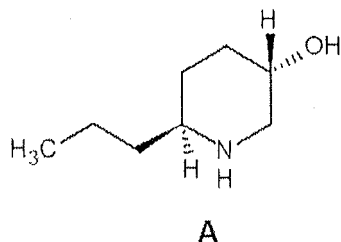
INDEX NO:

IMPORTANT INSTRUCTIONS/ INFORMATIONS TO CANDIDATES

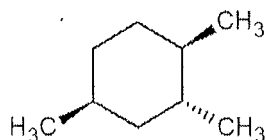
- This question paper consists of **03 pages** with **05 Essay Questions**.
- Write your **Index Number** in the space provided.
- Answer **ALL** questions.
- **All the questions should be answered in the booklet provided.**
- Mobile phones and any other electronic equipment are **NOT** allowed.

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FINAL EXAMINATION-LEVEL 3
 Answer **ALL** questions

1. Consider the following chemical compound **A**.

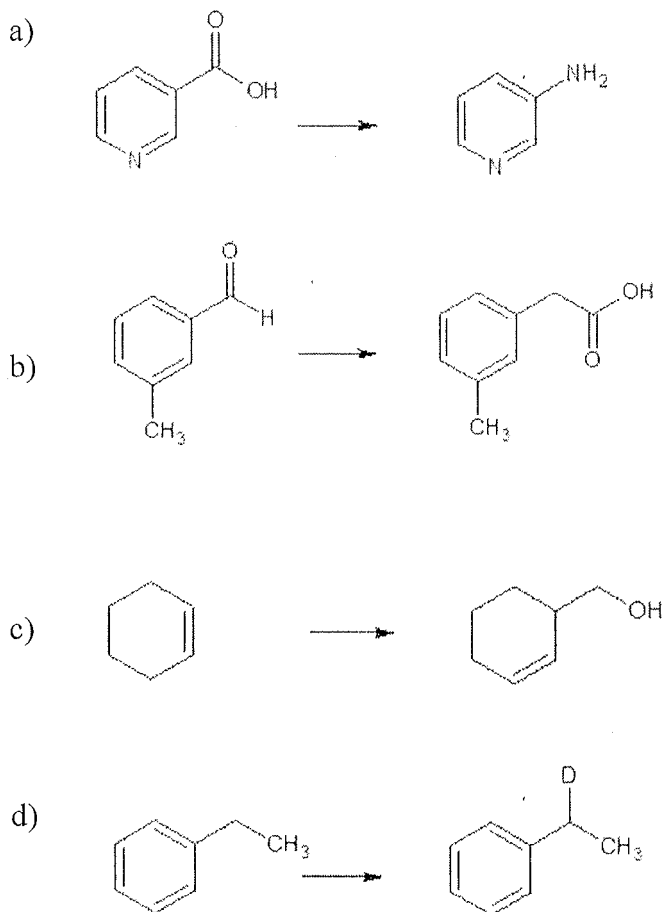


- a) How many stereo centers are there in this molecule? (02 marks)
 - b) Determine the configuration of each of those stereocenters. (04 marks)
 - c) Draw the structure of enantiomer (**B**) of the compound **A**. (03 marks)
 - d) What is the $[\alpha]_D$ of **B** and the equimolar mixture of **A** and **B** if the $[\alpha]_D$ of **A** is +12.2? (04 marks)
 - e) Draw the structure of the product when compound **A** undergoes an oxidation process with PCC. (03 marks)
 - f) How would you attempt to separate a mixture of **A** and **B**? (04 marks)
2. a) Why does the carbocation intermediate in the hydrolysis of 2-bromo-3-methylbutane rearrange by the way of a hydride shift rather than a methyl shift? Explain your answer by providing a suitable mechanism. (10 marks)
- b) When an unknown compound (**C**) reacts with Br_2 in the presence of light, product **D** ($\text{C}_9\text{H}_{19}\text{Br}$) is formed as the major product. Reaction of **D** with Sodium Ethoxide in ethanol produces 3-ethyl-4,4-dimethyl-2-pentene as the only product. Identify the structures of compounds **C** and **D**. (10 marks)
3. a) Draw the chair conformations of the following substance. Giving reasons, state which conformation is more stable. (10 marks)



- b) Draw Newman projections of the 1-chloropropane when sight along the C1-C2 bond. Indicate the most stable and the least stable conformations. (08 marks)

4. Giving necessary reagents and conditions show how all of the following transformations can be carried out. (22 marks)



5. a) Giving reasons explain following statements.

p-methoxyaniline is more basic than aniline (05 marks)

pK_a of fluoroacetic acid is lower than that of acetic acid (05 marks)

d) Provide the mechanism and the product formed when ethanal undergoes aldol reaction with benzaldehyde. Does this reaction form any other products? Explain. (10 marks)