Reg. No. | | | | | | | | | | |

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. Degree Programme and Stand-Alone Courses in Science 2019/2020

CYU4303 - Organic Chemistry I

Home Assignment

Q	Max.	Marks	Checked	%
1				
2				
3				
4				
5				
6				
7				
8				

➢ Read the following instructions carefully and act accordingly.

INSTRUCTIONS:

1. Assignment should be done **individually.**
2. One should send only **one assignment.**
3. Answer all questions; answers should be written **only** in the spaces provided. Additional sheets of paper/ attachments will **not be marked.**
4. Worked assignments should be sent **only by registered post** to reach:

   Coordinator/CYU4303
   Department of Chemistry
   The Open University of Sri Lanka
   P.O. Box 21, Nawala, Nugegoda

   with **'CYU4303 – Home Assignment 2019/20'** written on the top left-hand corner of the envelope.
5. Assignment due date is **4th August 2020.** In order to accommodate postal delays assignments will be accepted up to 07 days later. Late assignments will **not be marked.**
6. Marks for this assignment will be considered in **calculating your OCAM.** Home assignment based OCAM calculation is valid **only for this year** (2020) due to COVID-19 pandemic situation.
7. Please **sign** below to indicate that you have read, understood and agree with the above instructions.

Signature: ..... Date: .....

Name: .....

Address: .....

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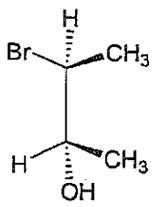
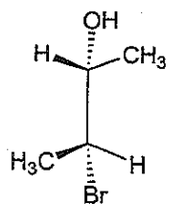
1. Determine the stereochemical relationship between the two molecules **A** and **B** given below?
   - Support your answer by giving R/S configurations of the chiral centres of them.
   - Clearly indicate the priorities of groups according to Cahn-Ingold-Prelog rules.



A



B

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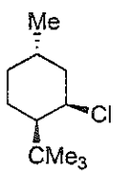
Give here any drawings which you made use of, in determining R/S configurations.

2. The following compound **X** undergoes E2 elimination with alcoholic KOH.
   i. Draw the two chair conformations of **X**.



X

Most stable conformation	Less stable conformation

   ii. Which chair conformation undergoes the E2 elimination? Explain why.

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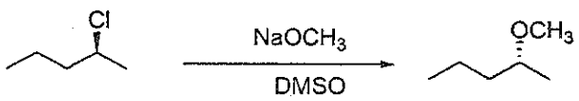
iii. Write the product/s of this reaction giving its mechanism. If you get a product mixture, giving reasons indicate what the major product is.

3. Predict the mechanistic pathway of the following reaction giving reasons.



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4. Compound **C** is an aldehyde which can undergo self-condensation with base and compound **D** is a ketone which cannot undergo base catalyzed condensation itself.
   - Give suitable structures for **C** and **D**.
   - Draw the structure of the crossed aldol product of **C** and **D**.

C = An aldehyde which itself can undergo aldol condensation.

C

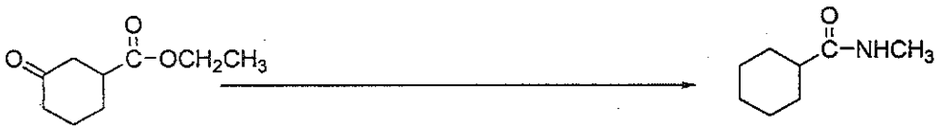
NaOH

D = A ketone which itself cannot undergo aldol condensation.

D

5. Show how you can carry out each of the following transformations in **less than four** steps.

i. $(CH_3)_3C-OH \longrightarrow (CH_3)_3C-CH_2OH$

ii. 

iii. 

6. State whether each of the following compounds are aromatic, anti-aromatic or non- aromatic. Give reasons for your answer.

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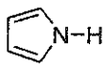
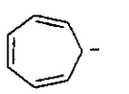
	....
	....

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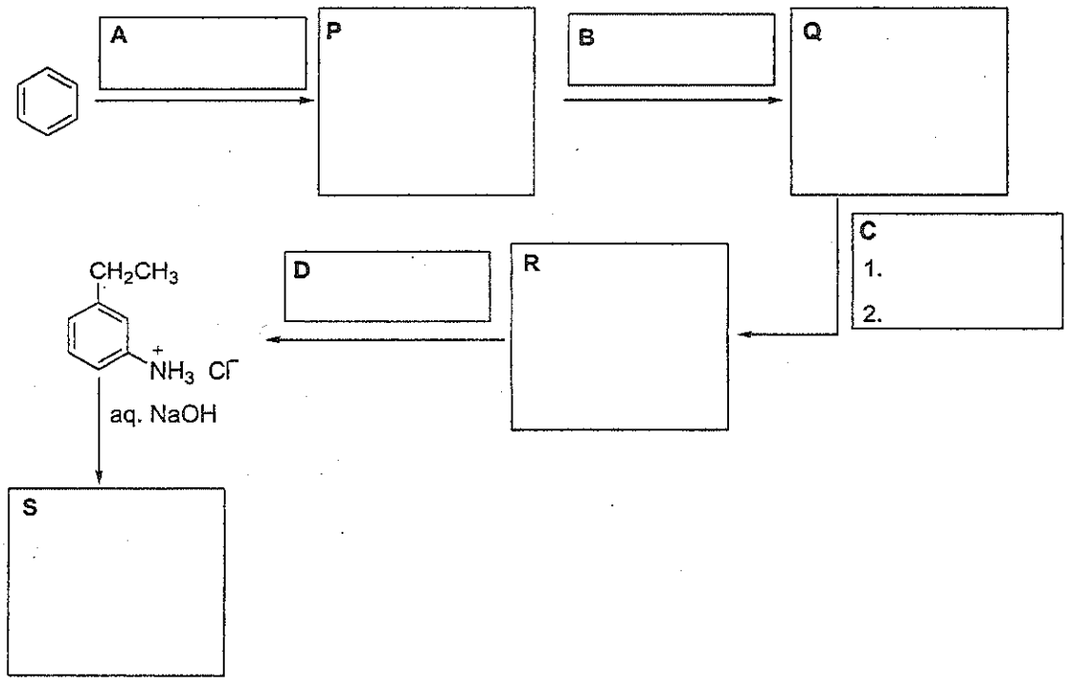
7. Complete the following reaction scheme giving the structures of the intermediates and appropriate reagents and reaction conditions.



8. Compare the influence of the following substituents of benzene on the reactivity during electrophilic substitution. Give reasons for your answer.

$-OH$ $-O^-$ $-\overset{O}{\overset{\|}{C}}-O-CH_3$

--------- *End* ---------