

## FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023

(Regular/Improvement/Supplementary)

## CHEMISTRY

## GCHE4B04T: ORGANIC CHEMISTRY-I

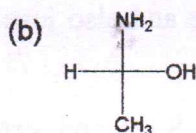
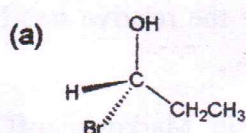
Time: 2 Hours

Maximum Marks: 60

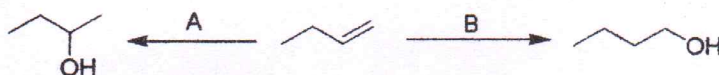
SECTION A: Answer the following questions. Each carries two marks.

(Ceiling 20 Marks)

1. What is meant by homolytic fission of a bond?
2. Which one is more stable, 2-methylbut-2-ene or 2-methylbut-1-ene? Why?
3. What is meant by inductive effect? Name groups which show -I and +I effects.
4. Draw the Sawhorse and Newman projections of ethane.
5. Comment on the low stability of cyclopropane.
6. Assign the configuration R or S to the following compounds:



7. Why is acetylene more acidic than ethylene?
8. Predict the reagents A and B in the following reactions.



9. Predict the reagents A and B in the following reactions.



10. Suggest reactants and reagents required for the following reaction:



11. How is furan synthesized?
12. How will you synthesize 2-aminopyridine from pyridine?

(PTO)

**SECTION B: Answer the following questions. Each carries five marks.**

**(Ceiling 30 Marks)**

13. Briefly discuss about the structure, formation and stability of carbocations.
14. Compare the physical and chemical properties of enantiomers and diastereomers.
15. Briefly discuss the optical isomerism observed among (a) biphenyls and (b) allenes.
16. Explain the reaction of methane with chlorine in the presence of light and give its mechanism.
17. What are the major products formed when propyne is treated with following reagents:
  - (i)  $B_2H_6$  and  $H_2O_2/NaOH$ ; and
  - (ii)  $dil.H_2SO_4$  in presence of  $HgSO_4$ .
18. State Huckel's rule of aromaticity. Which among the following are aromatic compounds:
  - (i) Cyclopentadienyl cation; and (ii) Pyridine.
19. Discuss the structure and important reactions of thiophene.

**SECTION C: Answer any one question. Each carries ten marks.**

20. Write the various conformations of n-butane and also justify the relative stability of these conformations.
21. What are electrophilic addition reactions? State and explain Markownikoff's rule and Kharasch effect with a suitable example.

**(1 x 10 = 10 Marks)**