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D6BCH2202 **Reg. No.....**

Name: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2025

(Regular/Improvement/Supplementary)

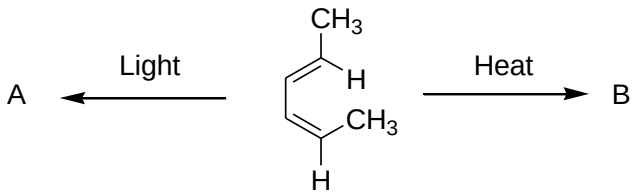
CHEMISTRY

GCHE6B10T: ORGANIC CHEMISTRY III

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 marks)

1. Why does starch give a blue colour with iodine?
2. What are suprafacial and antarafacial interactions between orbitals? Explain giving an example.
3. What is meant by denaturation of proteins? Explain with a suitable example.
4. Which vitamin is called the sunshine vitamin? Name a disease caused by its deficiency.
5. Draw the chemical structure of natural rubber?
6. Give the source and structure of Coniine.
7. Identify the products A and B in the given reaction below



8. Draw the π MOs of buta-1,3-diene and indicate which of them have mirror plane symmetry and which have C_2 symmetry.
9. Write a note on isoprene rule.
10. Distinguish between ethanol and ethyl amine with the help of infra-red technique.
11. Give the conversion of higher aldose to its lower analogue by Ruff degradation method with a suitable example.
12. What is a Diels-Alder reaction? Give one example.

(PTO)

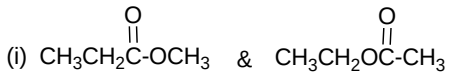
SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 marks)

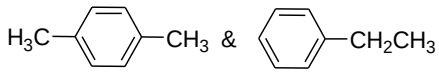
13. Explain the structure of maltose and sucrose? Comment on their reducing property.
14. Explain the Edman's method for the end group analysis of a polypeptide.
15. What are the products obtained when D-arabinose is subjected to the steps of Killiani-Fisher synthesis? Give equations involved.
16. Discuss the structure and physiological functions of sex hormones.
17. What are terpenes? How are they classified?
18. Write an account on the origin of IR spectra? What is meant by the fingerprint region and what is its significance in the IR spectral studies of organic compounds?
19. Analyse electrocyclic reaction of hexatriene with FMO method.

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

20. How can you obtain molecular structural information from a ^{1}H NMR spectrum? Explain.

    (a) How is ^{1}H NMR spectroscopy helpful in distinguishing between the following isomers?

(i) 

(ii) 

21. Explain the double helical structure of DNA. What are the important differences (structural and functional) between DNA and RNA?

(1 x 10 = 10 Marks)