

18U611

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Name:

Reg. No.

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCBCSS-UG)

(Regular/Supplementary/Improvement)

CC15U CHE6 B10 - ORGANIC CHEMISTRY III

(Chemistry - Core Course)

(2015 Admission onwards)

Time: Three Hours

Maximum: 80 Marks

Section A

Answer *all* questions. Each question carries 1 mark.

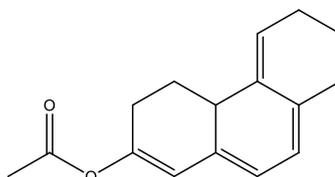
1. Identify the most shielded proton/protons of the propanoic acid.
2. Draw the structure of β -D-fructopyranose.
3. What is the systematic name of lactose?
4. Which test identifies the presence of amino acids with aromatic groups in a protein?
5. Name any two female sex hormones.
6. Give an example for monocyclic monoterpene.
7. Draw the structure of quinine.
8. Which characteristic IR-band distinguish an aldehyde from ketone?
9. Name the nitrogenous base which is present only in RNA.
10. What is the main source of citral?

(10 \times 1 = 10 Marks)

Section B

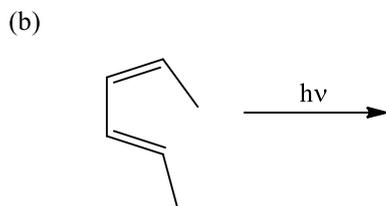
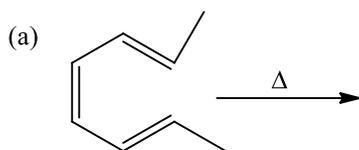
Answer any *ten* questions. Each question carries 2 marks

11. Why TMS is used as reference in NMR spectroscopy?
12. What are anomers? Illustrate the anomeric forms using glucose.
13. Write a note on chemistry of Tollen's test.
14. Discuss the Millions's test for proteins.
15. Calculate the λ_{\max} of the following compound.



16. What you meant by saponification value? What is its industrial importance?
17. Explain nucleotides with an example.
18. What is DNA finger printing? Give its application.
19. Explain the term auxochromes.
20. How the functional group isomers with molecular formula C₂H₆O are distinguished using IR spectroscopy?

21. Give the product of following reactions with stereochemistry.



22. What are anabolic steroids? Give an example.

(10 × 2 = 20 Marks)

Section C

Answer any *five* questions. Each question carries 6 marks.

23. What is chemical shift in NMR spectroscopy? Sketch the ^1H NMR spectrum of ethanol and explain it.
24. Discuss the methods adopted for the isolation essential oils from plants.
25. How vitamins are classified? Draw the structure of Vitamin B₃ and B₆.
26. Discuss the secondary and tertiary structure of proteins.
27. What are lipids? How are they classified? What are their functions?
28. [1,3] sigmatropic hydrogen shift under thermal condition is not observed. Substantiate this observation.
29. Discuss the structure of DNA.
30. Illustrate Killiani-Fischer synthesis with suitable examples.

(5 × 6 = 30 Marks)

Section D

Answer any *two* questions. Each question carries 10 marks.

31. (a) Write a note on solid phase peptide synthesis.
(b) Discuss the Sanger's method of N-terminal residue analysis.
32. Discuss the salient steps involved the biosynthesis of proteins.
33. (a) Sketch the MO diagram of 1,3-butadiene and show the HOMO and LUMO in the ground state.
(b) Using the Frontier orbital diagram show the mode of cyclisation of 1,3-butadiene under thermal and photochemical conditions.
34. (a) Show the conversion aldose to ketose and vice versa.
(b) Discuss the structure of starch.

(2 × 10 = 20 Marks)
