

Reg. No

Name

M. Sc DEGREE END SEMESTER EXAMINATION - OCTOBER 2019
SEMESTER 1 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY
COURSE : 16P1CHET02 / 16P1CPHT02 : BASIC ORGANIC CHEMISTRY
(For Regular - 2019 Admission and Supplementary - 2016/2017/2018 Admissions)

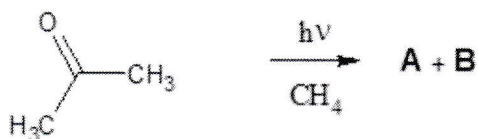
Time : Three Hours

Max. Marks: 75

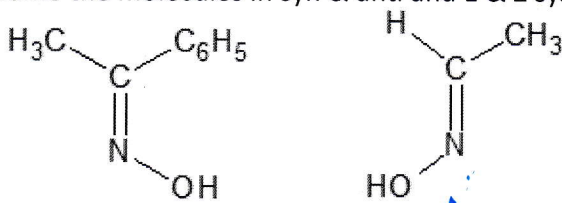
Section A

Answer any 10 (2 marks each)

1. Give any one product formed during the photolysis of cyclohexanone.
2. Norbornene reacts with benzophenone triplet to give oxetane, while it reacts with acetone triplet to give its dimer. Account.
3. What are A and B. Explain.



4. Draw the most stable conformation of 1,2-difluoroethane. Rationalise your answer.
5. Which is oxidised faster cis or trans-4-t-butylcyclohexanol? Explain.
6. Define alternating(improper) axis of symmetry. Explain the relationship between S_n and optical activity.
7. Name the molecules in syn & anti and E & Z systems of nomenclature.



8. Explain bimolecular displacement mechanism in aromatic nucleophilic substitution?
9. S_N2 reaction is most favorable in non-polar solvents. Why?
10. What is the difference between a transition state and an intermediate? Cite suitable examples?
11. Explain thermodynamic control of a reaction taking a suitable example.
12. How can NMR be used as a tool for aromaticity?
13. What is hyperconjugation? Give an example.

(2 x 10 = 20)

Section B

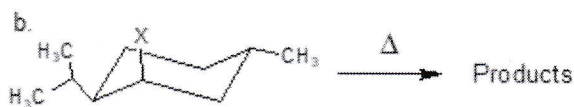
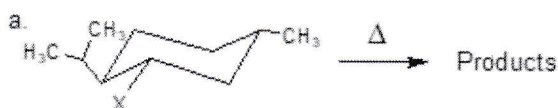
Answer any 5 questions by attempting not more than 3 questions from each of the following bunches (5 marks each)

Bunch I

14. Explain the mechanisms of Barton reaction and Di- π -methane rearrangement.
15. Discuss in detail, the various conformations of 2,3-diphenylbutane.
16. Write briefly on the application of NMR spectroscopy in the determination of stereo heterotopic hydrogens.
17. Give brief notes on: a) $S_{RN}1$ mechanism in aromatic nucleophilic substitution citing example?
b) S_N1 mechanism in aromatic nucleophilic substitution with example?

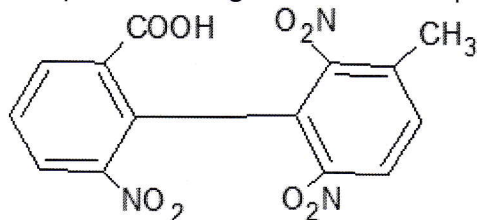
Bunch II

18. Draw the conformation of the products formed in the following reactions. Name the reactions involved.

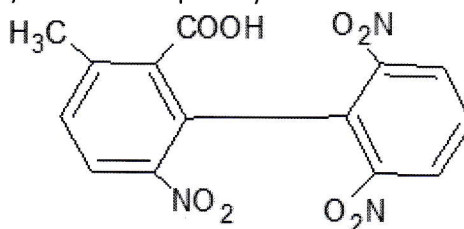


X=xanthate group

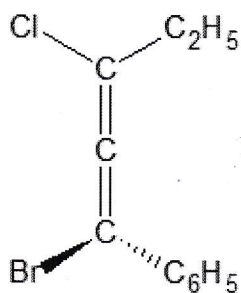
19. Classify the following molecules into optically active and optically inactive. Rationalise your answer.



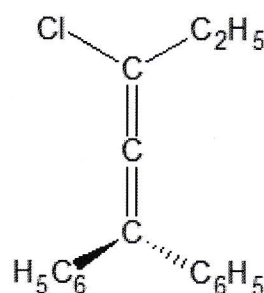
a.



b.

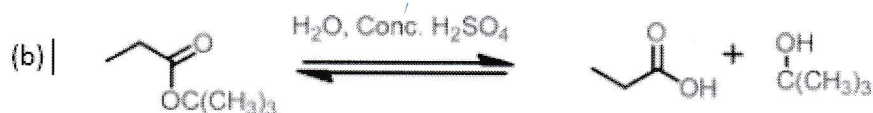
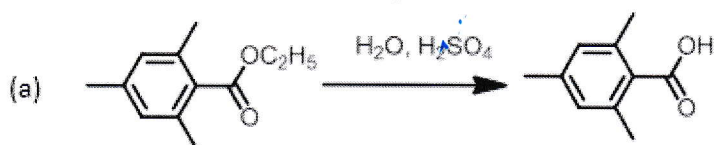


c.



d.

20. Write the mechanism of following reaction



21. Derive any one Linear free energy relation and explain the terms involved.

(5 x 5 = 25)

Section C

Answer any 2 (15 marks each)

22. Explain in detail the significance of *Jablonski* diagram and related processes and write a note on the photochemistry of vision.
23. Discuss in detail the effect of conformation on debromination, dehydrobromination and pyrolytic eliminations taking any two examples for each type of reactions.
24. (a) Write briefly on the mechanism of racemisation and asymmetric synthesis. (b) Explain the Stereochemistry of ansa compounds, spirans and annulenes.
25. Give details of synthesis and properties of fullerenes, carbon nano tubes and graphenes?

(15 x 2 = 30)