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Name..... 35

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, JUNE 2014

(CUCSS)

Chemistry

CH2 C06—ORGANIC CHEMISTRY—II

(2010 Admissions)

Time : Three Hours

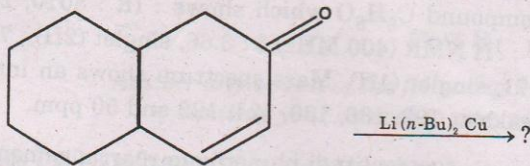
Maximum : 36 Weightage

Part A

Answer all questions.

Each question carries 1 weightage.

1. With an example illustrate the use of $\text{PhN}=\text{N}^+$ as a synthetic intermediate.
2. Discuss the structure and formation of triplet and singlet carbenes.
3. Write two methods by which aryl nitrenes may be obtained.
4. What is the E_{IcB} mechanism of nucleophilic aromatic substitution ?
5. What is Schmidt reaction ?
6. What are batho, hypso, hypo and hyperchromic shifts of absorption bands in UV-Vis spectroscopy ?
7. How can a primary amide distinguished from a secondary amide by IR spectroscopy ?
8. The substitution pattern of disubstituted benzene derivatives can be determined by IR spectroscopy. Explain how.
9. Write an example for the use of DDQ as an oxidant.
10. Crown ethers are useful in organic synthesis. Explain why and illustrate with examples.
11. What would be the product in the following reaction ?



12. Li and Na borohydrides are useful in synthesis. Compare their selectivity as reductants.

Turn over

13. S and Se find use in natural product structure elucidation. With an example show how.
14. How can the number of active hydrogens in natural products estimated chemically ?

(14 × 1 = 14 weight)

Part B

*Answer any seven questions.
Each question carries weightage 2.*

15. Describe the formation stability and reactivity of carbon free radicals.
16. Elucidate the selection rules for 1,3 and 1,5 sigmatropic rearrangements.
17. Write the mechanism of Wagner-Meerwin and pinacole-pinacolone rearrangements.
18. Discuss the ORD curves of decalones and show how ORD is useful in elucidating structural asp
19. With examples, show why IR spectroscopy is a simple tool for the detection of functional gro
20. What are the major rearrangement-cum-fission reactions seen in EI mass spectroscopy ?
21. Write examples for the use of (i) Me_3SnH and (ii) Wilkinson catalyst in synthesis.
22. Write a brief note photochemical rearrangements.
23. How was atropine structure established ?
24. Write notes on Hoffman and Emde degradations of alkaloids. (7 × 2 = 14 weight)

Part C

*Answer any two questions.
Each question carries weightage 4.*

25. Elucidate the selection rules for thermal and photochemical $4n$ and $4n+2$ electrocyclicisations.
26. Describe the mechanism and application of (i) Peterson reaction ; (ii) Favorski rearrangem
(iii) Heck reaction and ; (iv) Bayer Villiger rearrangement.
27. (a) Explain how chemical shift values aid in the structure determination of organic compo
(b) Deduce the structure of the compound $\text{C}_8\text{H}_8\text{O}$ which shows : IR : 3010, 2950w, 28
1695, 1510, 1005, 750, 690 cm^{-1} ; ^1H NMR (400 MHz) δ : 3.66, singlet (2H) ; 7.06, multi
(3H) ; 7.14, multiplet, (2H) ; 9.71, singlet (1H). Mass spectrum shows an intense peak
 m/z 91 and 65. ^{13}C NMR has peaks at 198, 136, 130, 124, 122 and 50 ppm.
28. Write notes on (i) Paterno Buchi reaction and ; (ii) di-pi methane rearrangement ; (iii) Ba
reaction and (iv) Jablonski diagram.

(2 × 4 = 8 weight)