UG (CBCS) EVEN SEMESTER EXAMINATION, 2023

EDUCATION (B.Sc. B.Ed.)

CHEMISTRY (HONOURS)

8th Semester

Course No. : BSCH - 801

(Organic Chemistry)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

(Answer any five questions)

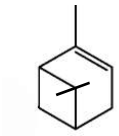
1. (a) Describe the phenomenon of resonance in NMR spectroscopy. 3

   (b) What is vicinal coupling? Write down the Karplus equation and explain the parameters involve in the equation. 4

   (c) Which of the following nuclei are NMR active ^{12}C , ^{13}C , ^{16}O , ^{11}B , ^{14}N , ^{15}N , ^{19}F , ^{31}P 2

   (d) Define chemical shift. 1

2. (a) "α-pinene has three methyl groups". Comment on the chemical shift of three different types of methyl proton in α-pinene. 3



α-pinene

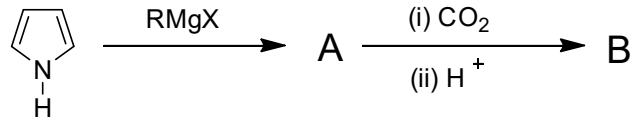
(b) Comment on the NMR spectra of N. N-dimethyl formanide recorded at room temperature and at high temperature (~ 130^0c) 3

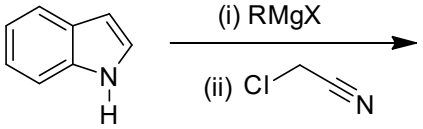
(c) Write a note on how hydrogen bording influences chemical shift position in a proton NMR spectrum. 2

(d) Why TMS is the universally accepted reference in proton and ^{13}C - NMR 2

3. (a) How benzylic Grignard reagent reacts with formaldehyde. Provide mechanism. 4

(b) Write down the products of the following reactions. (provide mechanism) 3+3=6

(i) 

(ii) 

10. (a) What is Carboxypeptidase A? Give one example of reaction catalysed by carboxy peptidase A. 1+3=4

(b) How NAD^+ oxidize a substrate? Provide mechanism. 4

(c) Describe the nature of hydrogen bonding among the DNA- bases. 2

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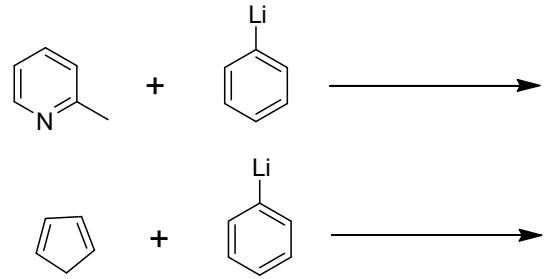
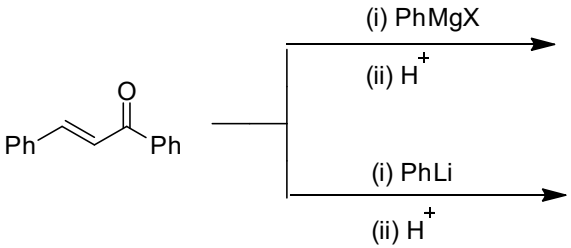
4. (a) Complete the following reaction : 2



(b) Write down the products for the following reaction : 4



(c) Compare the reactivity of CO_2 with Grignard reagent and Organolithium compounds. 4

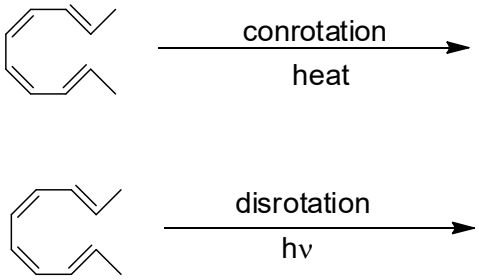
5. (a) What is the endo-rule as applied to Diels-alder reaction? Explain with suitable example. 5

(b) "Diels alder reaction is a stereo-specific". Explain with suitable example. 5

Or

6. (a) What is sigmatropic reaction? Describe the process of supra facial and antara facial migration in sigmatropic reactions. 1+4=5

(b) Write down the products for the following reactions : 5



7. (a) What is Sulpha-Drug? Give one example. 3

(b) Provide one method of poeporation of paracetamol. What is the pharmaceutical importance of paracetamol. 3+2=5

(c) Explain the pharmaceucial importance of "Dapsone" 2

Or

8. (a) What are antibiotics? Give one example of β-lactum antibiotic and provide its structure. 1+2=3

(b) What is API. 2

(c) Provide one method of synthesis of Aspirin. What is the pharmaceutical use of Aspirin? 3+2=5

9. (a) Describe the secondary structure of DNA with clear diagram. 5

(b) Write down any five basic principle of Green chemistry. 5

Or