UG (CBCS) Even Semester Examination, May 2025

EDUCATION
(B.Sc. B.Ed.)

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 five questions*)

1. (a) Why TMS is used as internal standard in NMR spectroscopy? 2

   (b) In α-pinene two geminal methyl groups attached to the same carbon atom appear at δ =0.85, δ=1.27. Explain. 3

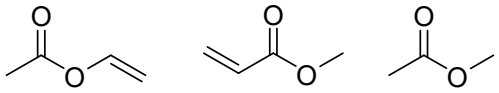
   (c) Which of the following nuclei exhibit NMR phenomenon? 2

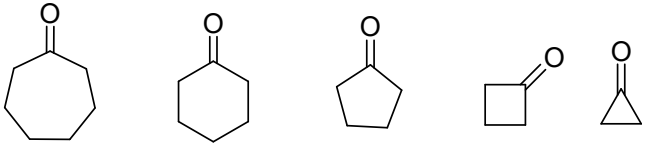
   ^{11}B , ^{12}C , ^{14}N , ^{16}O , ^{19}F , ^{31}P

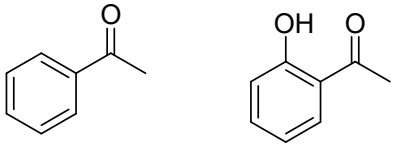
   (d) "The NMR spectrum of DMF, recorded around room temperature, show two signals for the methyl groups, although it might have been expected that the two methyl groups would be in magnetically equivalent environments". Explain. 3

Or

2. (a) Provide the relevant justifications and arrange the followings in ascending order of C=0 stretching. 2x3=6

(i) 

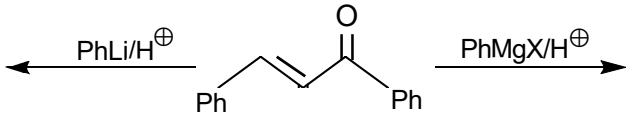
(ii) 

(iii) 

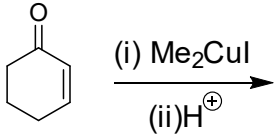
(b) Define the following terms : 4

Chromphore, Auxochrome, bathochromic shift and hypochromic shift.

3. (a) Predict the products of the following reaction: 5



(b) Predict the products of the following reactions and provide mechanisms 2+3=5



(iii) Bacteriostatic and Bactericidal;

(iv) In vivo and in vitro.

(c) Define the term "antibiotics". 1

Or

8. (a) What is Prontosil? Provide its method of preparation and its uses. 5

(b) Provide on method of synthesis of Aspirin. What is the pharmaceutical use of Aspirin? 5

9. (a) What is Carboxypeptidase A? Mention one reaction catalyzed by Carboxypeptidase A. 2+3=5

(b) How does NAD^+ oxidize a substrate? Provide mechanism. 5

Or

10. (a) What are the bases found in DNA and RNA. Provide their structures. 5

(b) Write down the structures of the followings :

(i) 2′ - deoxyadenosine 2+3=5

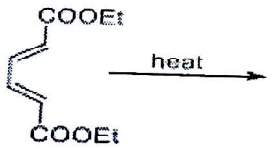
(ii) Adenosine 5′-monophosphate

★★★

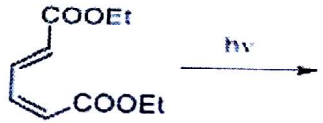
Or

6. Identify the product and its stereochemistry of elctrocyclic reaction in the following : 2x5=10

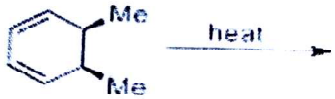
(a)



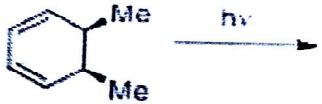
(b)



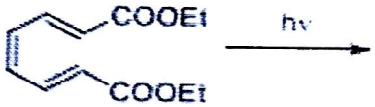
(c)



(d)



(e)

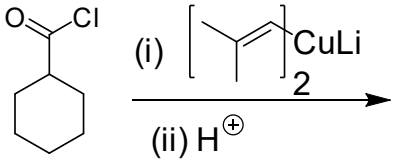


7. (a) What do you mean by pharmacokinetic phase? Discuss the different steps in Pharmacokinetic phase. 1+4=5

(b) Define the following terms : 4

(i) Endogenous and Exogenous compounds;

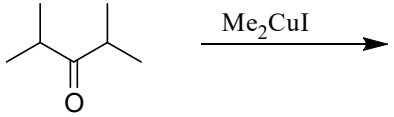
(ii) Agonists and Antagonists;



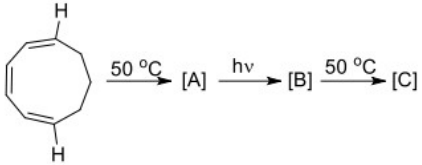
Or

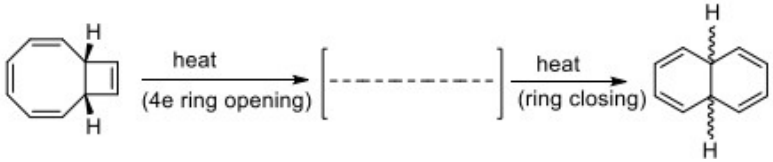
4. (a) How will you correlate the reactivity of organometallic compounds with their ionic character? 5

(b) Write down the product for the following reaction. Provide mechansim. 5



5. (a) The following reactions proceed through electrocyclic ring closure-ring opening-ring closure sequence. Identify the structure and stereochemistry of A, B and C, respectively. 5



(b) What are Suprafacial and antarafacial bond formation? Explain with suitable diagram. 2

(c) Complete the following reaction and predict the stereochemistry of the products. 3