Con. 2228-13.

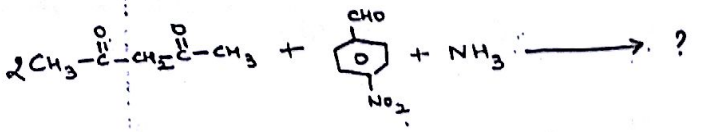
BS-6030

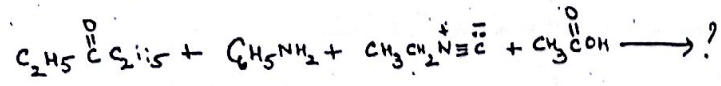
(2½ Hours)

[Total Marks : 60

N.B. : (1) **All questions are compulsory.**
(2) **Figures to the right indicate full marks.**

1. (a)(i) Give the product, name and mechanism of any **one** of the following : **4**

(I) 

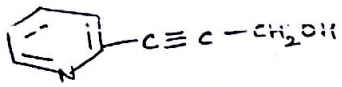
(II) 

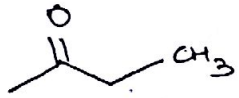
(ii) Give the mechanism and application of (any **one**) :- **4**
(I) Biginelli reaction (II) Mukaiyama esterification

(b) Explain the following with an example :- **4**
(i) Multicomponent reaction
(ii) Domino reaction

OR

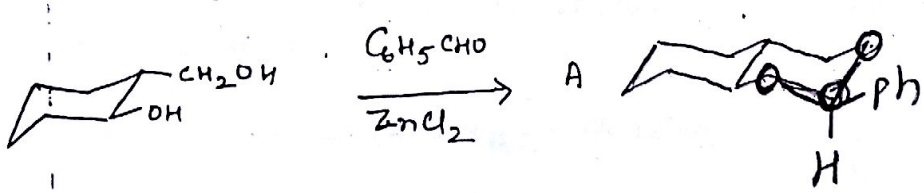
(b) How will you prepare - **4**

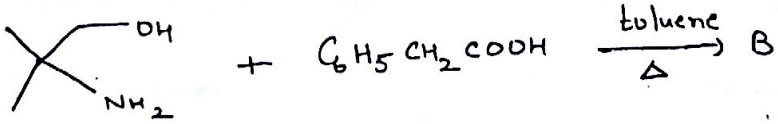
(i)  by Sonagashira reaction.

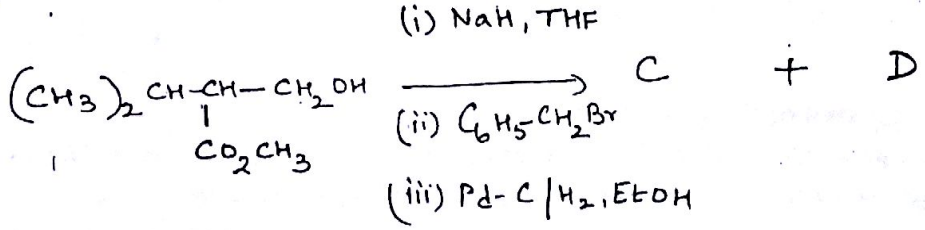
(ii)  by the Wacker process.

2. (a) Attempt any **two** of the following :

(i) Complete the following reaction by identifying A - D. **4**

(I) 

(II) 

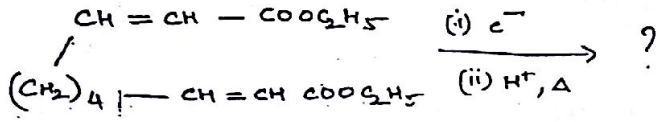
(III) 

(ii) What is umpolung ? How will you convert 4

$CH_3\ CH_2\ CH_2\ NO_2$ to $CH_3\ CH_2\ \overset{\overset{O}{\|}}{C}\ -\ \underset{\underset{OH}{|}}{CH}\ -\ C_2H_5$

(iii) Give the equations for the protection and deprotection of - 4
(I) -OH as MEM ether
(II) $-NH_2$ as benzyl oxycarbonyl.

(iv) Give the product and mechanism of the following reaction - 4



(b) Using the concept of protection-deprotection and umpolung, suggest a synthetic scheme to bring about the following conversions. (any **one**) 4

(i)

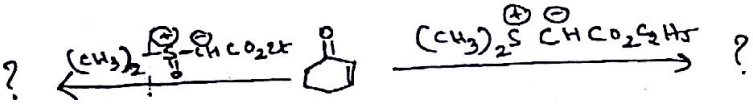
(ii)

. (a) Attempt any **two** of the following :
(i) Discuss mechanism and applications of Wittig-Horner reaction. 4
(ii) Describe the preparation of the following by enamine : 4

(iii) Explain Barton-Kellogg olefination. Give its mechansim, and application. 4
(iv) Write a short note on Steven's rearrangement. 4

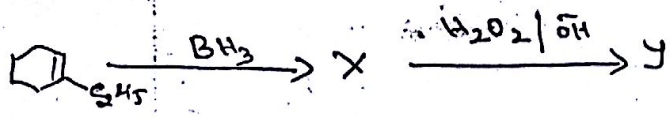
(b) Attempt any **one** :-
(i) using phosphorus ylide how would you prepare 4
(a) But-1-ene.
(b) 2-Methylbut-2-ene.

(ii) Predict the product. 4



. (a) Attempt any **two** of the following :
(i) Give an account of silylenol ethers as enolate anion precursor with suitable examples. 4
(ii) Discuss with examples the applications of alkenyl tin compounds. 4
(iii) Discuss the mechanism and regio-chemistry involved in oxymercuration demercuration of olefins with suitable examples. 4

(iv) Complete the following reaction and provide its mechanism. 4



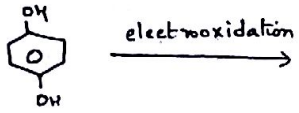
(b) Attempt any **one** of the following :

(i) Give the preparation and reactions of alkenyl silanes. 4

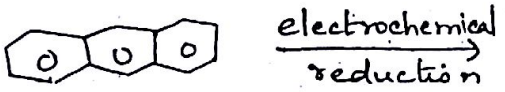
(ii) Explain Syn-elimination reaction using selenoxides. 4

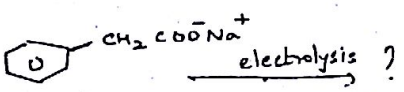
Attempt any **four** of the following :-

(a) Give the product and mechanism for the following reaction. 3



(b) Give the product of the following reactions : 3

(i) 

(ii) $CH_3CH_2COO^-Na^+$ + 

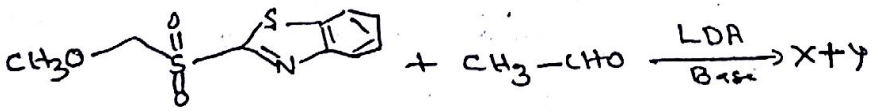
(iii) $CH_2=CHBr$ + $CH_3CH=CHCH_3$ $\xrightarrow[NaHCO_3]{Pd(0),\ PPh_3,}$?

(c) Give the mechanism and one application of Mitsunobu reaction. 3

(d) Discuss with an example, the use of dithiane as an acyl anion equivalent. 3

(e) How can the following compound be prepared via enamine method ? 3

(f) Predict the products and give the name of the following reaction. 3



(g) Discuss electrophilic reaction of allyl silanes. 3

(h) Complete the following sequence. 3