'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 3rd Semester Examination, 2021

CC6-CHEMISTRY

ORGANIC CHEMISTRY-II

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
All symbols are of usual significance.

GROUP-A

1. Answer any ***five*** questions from the following: 1×5 = 5

   (a) Phenol turns red on exposure. — Why?

   (b) Hydrolysis of ethyl vinyl ether take place 10^{13} time faster than that of diethyl ether. — Explain.

   (c) In case of MPV reduction, excess of iso-propanol is necessary. — Why?

   (d) Highlight the limitations of "Grignard reagent".

   (e) Among acetal and thioacetal, which can be cleaved very easily and why?

   (f) Reduction using LAH usually not carried out in aqueous medium. — Why?

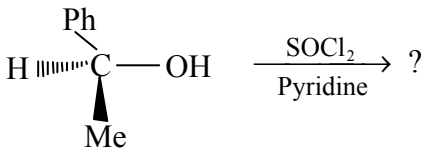
   (g) How do you prove "aldehydic hydride transfer occurs in Cannizzaro reaction"?

GROUP-B

2. Answer any ***three*** questions from the following: 5×3 = 15

   (a) (i) Write short note on "Benzoin condensation". $2\frac{1}{2}\times2=5$

   (ii) Can Beckmann Rearrangement be used for determination of oxime? Illustrate with example.

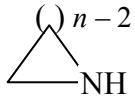
   (b) (i) 

$2\frac{1}{2}\times2=5$

   Identify the product with suitable stereochemistry along with a suitable mechanism.

   (ii) 2,4,6-trimethyl benzoic acid is very hard to esterify under normal condition, but undergoes esterification with ease when treated with concentrated H_2SO_4. — Explain.

   (c) (i) Keto methyl group is an essential feature for an iodoform reaction. — Why? 2+3

(ii) $H_2N-(CH_2)_{n-2}-CH_2Br \longrightarrow$ 

Under standard condition, the rate of cyclizations are recorded as follows:

n =	4	5	6	7
rate =	0.002	100	1.7	0.03

Explain these variations.

(d) (i) Arrange the following nucleophiles with increasing order of their nucleophilicity: 3+2

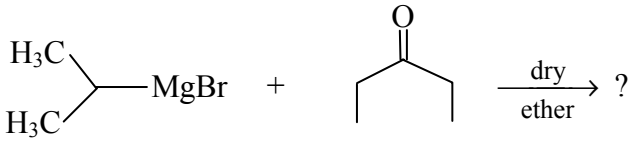
PhO^- , EtO^- , AcO^- , $^-NH_2$, $^-CHMe_2$

Provide suitable explanation in support of your choice.

(ii) $H_3C-\underset{OH}{CH}-\underset{OH}{CH}-CH_3 \xrightarrow{Pb(OAc)_4} A$

Find A and write its mechanism.

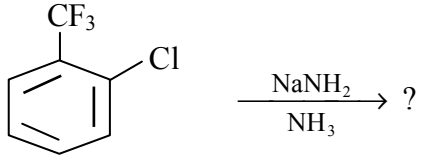
(e) Define "organometallic compound". How do you prepare PhLi? Write possible product(s) that one expect in the following reaction. — Explain the mechanism. 1+1+3

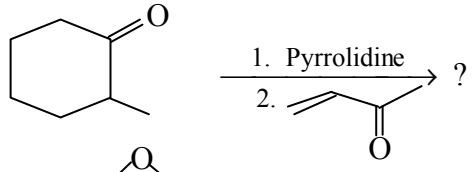


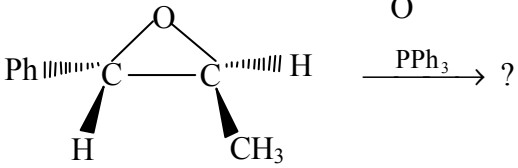
GROUP-C

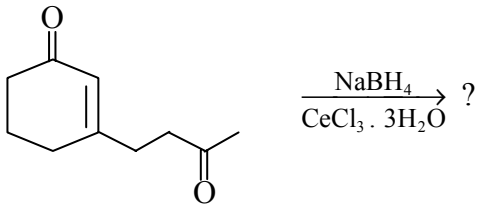
3. Answer any ***two*** questions from the following: 10×2 =20

(a) Predict the product(s) and suggest plausible mechanism. $2\frac{1}{2}\times4$

(i) 

(ii) 

(iii) 

(iv) 

(b) Write short notes on following: $2\frac{1}{2}\times4$

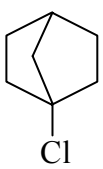
(i) Reformatsky reaction

(ii) Fries rearrangement

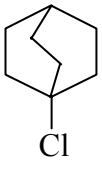
(iii) Kolbe's-Schmidt reaction

(iv) Perkin reaction.

(c) (i) Between two following chlorides, which one hydrolyses easily? 2+2+2 +2+2



and



(ii) Compare Clemmensen reduction with Wolff-Kishner reduction.

(iii) Give an evidence in favor of reversibility of Benzilic acid rearrangement.

(iv) After standing in aqueous acid (R)-2-butanol is found to have lost it's optical activity. Account this observation.

(v) Mention uses of both PDC and PGC.

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