Sample Question (Practical Organic chemistry Third year)

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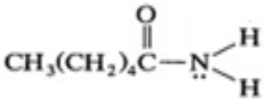
Q1 Define the following :1- Hydrolysis 2- Schiff base

Q2 Complete these reactions :

1- **NaOCl**  ⟶

2- 1-phenyl-2-methyl ethane-1,2-dione **NaOH** ⟶ **HCl** ⟶

3-  **m-methylbenzaldehyd** **$CH_3CH_2NH_2$** ⟶

Q3/ Explain this reactions 2-methyl-1,1-diphenylpropane **$\xrightarrow{H_2SO_4}$**

1- Banzamide + **NO_2^+** ⟶

Q4/ Write mechanism of : (Answer only one

Hoffmann rearrangement reaction

1- Preparation of N-benzylideneaniline

Q5/Define the following with example :

1- Dienophile 2- Benzilic acid rearrangement

Q6 Discuss why most alcohols are resistant to dehydration by base, but aldol products dehydrate easily?

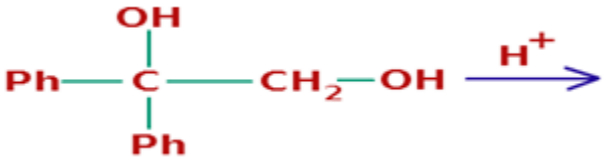
Q7 Write the reaction of NaNO2/ HClwith folioing compound and explain more stablediazonium salts?
(8mark)

1- $CH_3CH_2NH_2$
2- CH_3-NH-C_2H_5
3- C_6H_5-NH_2

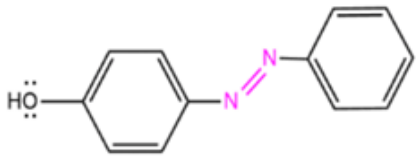
Q8 Complete these reaction :

1. Anthraquinone $\xrightarrow{K_2Cr_2O_7/H_2SO_4}$
2. Cyclopentadine +Maleic anhydride $\longrightarrow$
3. Benzaldehyde + Acetone $\xrightarrow{NaOH}$

Q9 Write mechanism for this reaction



Q10 Write all steps to forming this Azocompound ?



Q11 Define the following with example :

1- Aldo condensation **2**-Pinacol rearrangement **3**- Azo compound

Q12 Complete these reaction :

1- 1,3-Butadine + 3-Butaen-2- one $\longrightarrow$

2- 2,4-dinitrobromobenzene + Anilin $\xrightarrow{EtOH}$

3- Benzamide $\xrightarrow{HNO3/H2SO4}$

4- Tertioryaromatic amine $\xrightarrow{NaNO2/\ HCL}$

5- Benzil $\xrightarrow[(2)\ H2O\ (H)]{(1)\ NaBH4}$

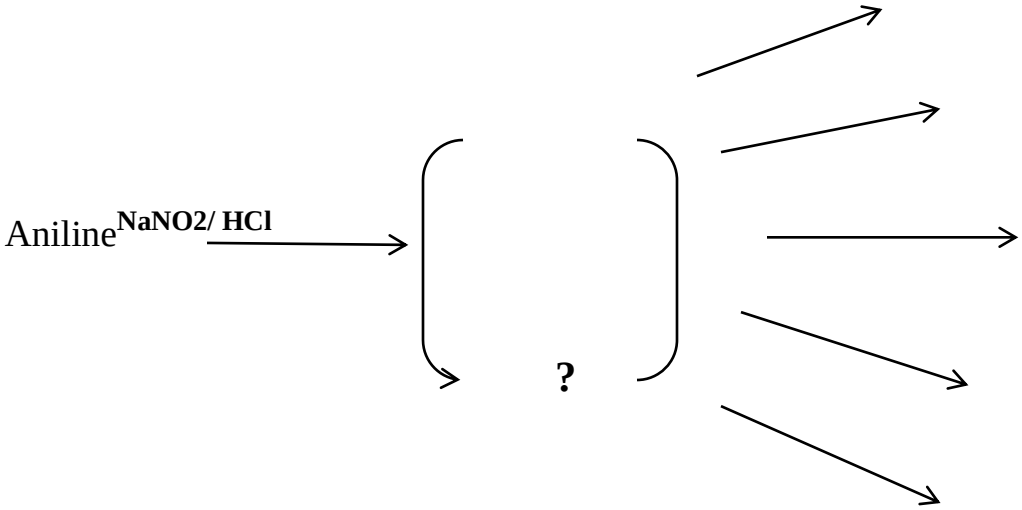
Q13 Write the reason of the following:

1- Diels- Alder reaction takes place easily between cyclopentadien and malic anhydride
2- The PH at which imine formation is carried aut must be carefully controlled
3- Aromatic diazonium salts are more stable than the Aliphaticdiazonium salts.
4- Aryl halides unreactive to ward SN2 displacement.
5- Must heating and added water in the last step of reduction of benzil

Q14 Write mechanismof :**(Answer only one)**

1- Hoffmane rearrangement
2- Synthesis of imin compound

Q15 Complete this reaction



Q 16 Explain why position 9,10 of anthracene is more reactive than position 1,4 when reacted with malic anhydride ?

Q17 Write mechanism reaction between **Benzil** and **o-phenyldiamine**

Q18Write the reason of the following:

The melting point of saturated fatty acid more than unsaturated fatty acid?

1- Polycyclic aromatic compound more reactive than benzene to ward Oxidation reaction?

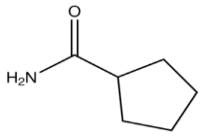
2- Reaction chlorobenzen with sodium amide tack place by second mechanistic sequence?

Q20 /Compare the reaction of aldehyde and acid chloride with nucleophilic agent

Q21 Why does the nitration of **methyl benzoate**take place preferentially at the **meta**position.

Q22 Complete these reaction :

1. **Benzaldehyde + Acetone** $\xrightarrow{NaOH}$

2.  $\xrightarrow[NaOH]{}$

3. **OHOH**

   Ph-C- C - HH$_2$SO$_4$ $\longrightarrow$

   H HΔ

4. 3-**Pentanone + dimethyl amine** $\xrightarrow{HCl}$

Q23 Write the reason of the following:

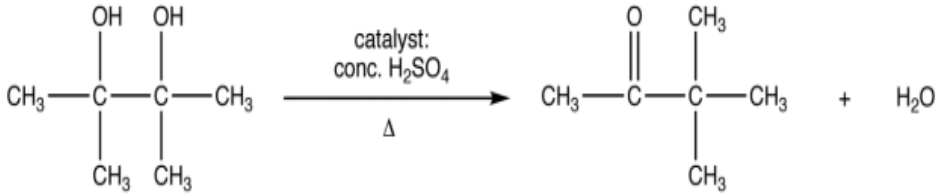
1-Amides have high boiling points?

2-The PH at which imine formation is must be controlled?

3-Amides are the least reactive toward nucleophilic attack?

Q24 Write mechanism of preparation **Benzilic acid.**

Q25 Discuss thisreaction :



Q26 Complete these reaction :

1- Banzamide +NaOH $\longrightarrow$? ? $\longrightarrow$

2- m-nitrobenzamide household bleach /NaOH $\longrightarrow$

3- Banzoic acid +RCOCl $\longrightarrow$

4- 3-Pentanone + dimethyl amine $\xrightarrow{HCl}$

Q27 Write the reason of the following:

6- Why does the nitration of **methyl benzoate** take place preferentially at the **meta**position.
7- The PH at which imine formation is must be controlled?
8- There is deferent between aldehyde and carboxylic acid derivatives to Nucleophlicreaction .

Q28 /Write mechanism of(P-nitrobanzil) by Benzilic acid rearrangement

Q29 Define the following with example :

Heterocyclic compound ,Enolate ion , Schiff base , Aldo condensation

Q30 Complete these reaction :(20mark)

5- O-phenylenediamine + Benzil $\xrightarrow{?}$

6- p- chloronitrobenzene + NaOH(%15) $\xrightarrow{160\ C}$

7- Anthracene + Malic anhydride $\xrightarrow{\Delta}$

8- Benzaldehyde + Acetone $\xrightarrow{NaOH}$

Q3 1 Write the reason of the following:

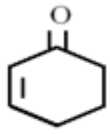
9- Nucleophilic aromatic substitution is very difficult if there no electron-withdrawing substituent on the aryl halidand with second mechanistic sequence?

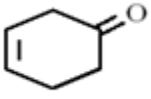
10- Diels- Alder reaction takes place easily between cyclopentadien and malic anhydride?

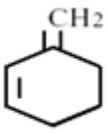
11- The PH at which imine formation is carried aut must be carefullycontrolled ?

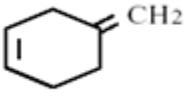
Q32/ write mechanism of imine formation by reaction aldehyde with primary amine.

Q33 Explain which of these dienophiles gives the **fastest** reaction with cyclopentadiene ?

A. 

B. 

C. 

D. 

Q34/ Define Aldol condensation and write an aldol condensation product between Acetone and benzophenone (1:1 ratio)

Q35 The pH at which imine formation is carried out must be carefully controlled ?

Q36 Explain this reaction **:**

2-methyl-1,1-diphenylpropane $\xrightarrow{H_2SO_4\ /\ \Delta}$

a)which of the two group will be protonated **?**

b)which of the group will migrate ?

Q37 Write mechanism of:**(Answer only one)**

1- Benzopinacol $\longrightarrow$ Banzopinacolone (pinacol rearrangement)

2- preparation of N-benzylidene analine (Schiff Base)

Q38 Complete these reaction:

1- Triacylglycerol + $NaOH / H_2O$ $\longrightarrow$

2- Phenyl methyl dikitone $\xrightarrow{\textbf{NaOH}}$ $\xrightarrow{HCl}$

3- 2,4-dinitrochlorobanzene + $NaOCH_3$ / CH_3OH $\longrightarrow$

4- m-nitrobenzamide + household bleach $\xrightarrow{\textbf{NaOH}}$