Organic Lab (239)

Quiz I

Name: [redacted] Uni. No. 0116978

Q1. Answer each of the following concerning the melting point and boiling point experiments that you did in the lab:

(✗) Toluene (b.p 115 °C) and chloroform (b.p 64 °C) could be separated efficiently by simple distillation. 115 − 64 = 51

(✗) Experiments should not be left unattended.

(✗) Presence of sand in the sample will not affect the melting point range.

(✓) The solid should be ground to a fine powder for melting point measurement.

(✓) The condenser, adapter, distillation head and round bottom flask were used in the b.p. experiment.

(✗) Mixture of acetone and water could be heated by direct flame. (water bath)

(✗) In the b.p exp. each ground joint should be greased to prevent pumping. ⇒ to ensure that the system is sealed

(✓) If each of the compound A and compound B has the same melting point, the mixture sample of A and B (1:1) would have a melting point lower than each of them.

(✗) Soluble impurities will lower the melting point of the substance and narrow the melting point range. → broaden

(✓) Superheating may lead to the absence of the drop at the bulb of the thermometer.

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Organic Lab (239)

Quiz II

10

Name: Uni. No. 0116978

Q1. Answer each of the following concerning experiments that you did in the lab:

(T) Crystals on the Buchner funnel should be washed only with cold suitable solvent (not a hot one) in the recrystallization exp. (cold filteration)

(T) Salting-out phenomenon may decrease the solubility of an organic substance in the saturated aqueous phase in the extraction exp.

(F) Soluble impurities were removed first then insoluble impurities in the recrystallization exp.

(T) In the extraction exp, dividing the total volume of extracting solvent is more efficient than to use the whole volume in a single extraction.

(T) The mass of the crude sample is 1.0 g and 0.8 g of the purified one, the yield is 80%.

Q2. Complete the following:

- Anhydrous sodium sulfate may be used in the extraction exp. to...adsorb...the...water...in...the...organic...phase.....
- Avoid vigorous shaking during the caffeine extraction since....it....will....cause....emulsions.....
- Caffeine substance should not be heated for a longer time since....it....decomposes...readily.....
- In the recrystallization exp, the flask should be removed from the heat source before adding the charcoal to it, to.....avoid....bumping...of...the...solution.....
- The solvent-pair may be used in the recrystallization exp if....the...solute...is...largely...soluble...in...one..... solvent and insoluble in the other => Therefore, a mixture of both solvents can be used.

Organic Lab (239)

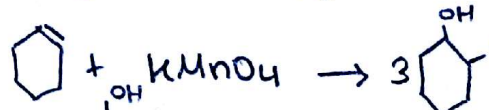
Quiz III

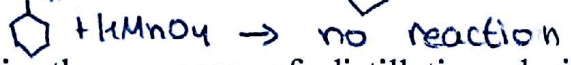
9.5

Name: [redacted] لين أبوزر Uni. No. 0116948

Q1. How can you distinguish between cyclohexene and cyclohexane using Baeyer test?

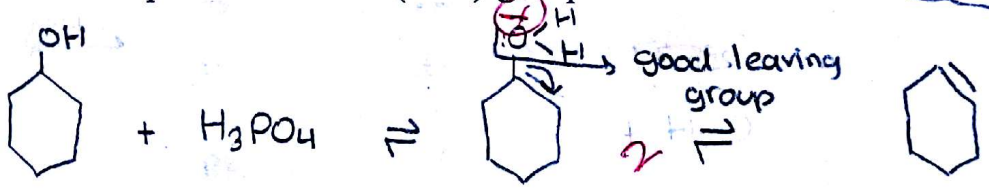
Cyclohexene reacts with $KMnO_4$ to form a brown ppt and glycol MnO_2 whereas cyclohexane doesn't react.

cyclohexene :-  2

cyclohexanol :- 

Q2. What is the purpose of distillation during the preparation of cyclohexene? To seperate the cyclohexene from the cyclohexanol to increase the yield of cyclohexene and since the reaction is reversible cyclohexene must be removed to push the forward rxn. 2

Q3. Show by chemical equation how the (-OH) group is leaved from the alcohol?



2

Q4. The excess phosphoric acid was removed during the experiment by adding Sodium carbonate Na_2CO_3 (base)

1.5

Q5. Calculate the percentage yield of cyclohexene knowing that the actual yield is 0.25 g and molar mass of cyclohexene 82 g/mol, cyclohexnol 100 g/mol, density of cyclohexene 0.81 g/ml and the mass of cyclohexanol is 10 g?

ratio 1:1

cyclohexanol : cyclohexene

$$10\ g\ \text{cyclohexanol} \times \frac{1\ \text{mol cyclohexanol}}{100\ g\ \text{cyclohexanol}} \times \frac{1\ \text{mol cyclohexene}}{1\ \text{mol cyclohexanol}}$$

$$\times \frac{82\ g\ \text{cyclohexene}}{1\ \text{mol cyclohexene}} = 8.2\ g\ \text{cyclohexene}$$

2

$$\%\ \text{yield} = \frac{0.25}{8.2} \times 100 = 3.05\ \%$$

Organic Lab

Quiz

6.5

Name:

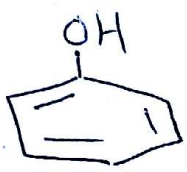
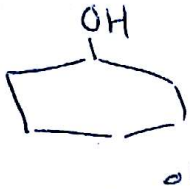
011054 7

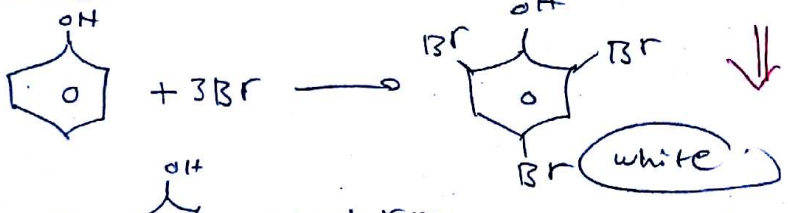
Q1.) How can you differentiate between:-

* $CH_3CH_2CH_2OH$ and $CH_3\underset{OH}{\underset{|}{C}}HCH_3$

$CH_3CH_2CH_2OH + K_2Cr_2O_7 \longrightarrow CH_3CH_2\overset{O}{\overset{\|}{C}}-OH$ (green) X

$CH_3CHCH_3 + K_2Cr_2O_7 \longrightarrow$ not rxn

*  and  (using the bromination test).



2.5

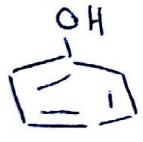
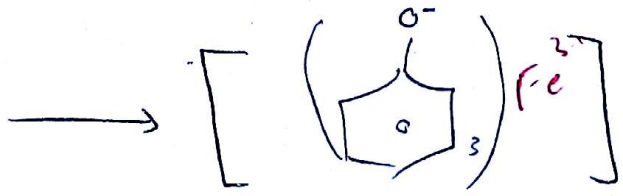
* $CH_3\overset{3^\circ}{\underset{CH_3}{\underset{|}{C}}}CH_3$ and $CH_3CH_2CH_2\overset{1^\circ}{C}H_2Cl$

* $CH_3-\underset{CH_3}{\overset{OH}{\overset{|}{\underset{|}{C}}}}-CH_3 \xrightarrow{HCl} CH_3-\underset{CH_3}{\overset{Cl}{\overset{|}{\underset{|}{C}}}}-CH_3$??? 2.5

a) HCl, Δ b) Cl_2, room temperature (c) HCl, room temperature

d) AgCl, Δ e) none of them.

1.5

*  + $FeCl_3 \longrightarrow$  the color of product is ..red...