Preparatory pro3 Tm(P)1174tl

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Contributing authors

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Contents

Physical Constants, Formulas, and Equations

Avogadro's constant: $N_A = 6.0221 \quad 10^{23}\text{mol}^{ï1}$

Theoretical problems

Problem 3. Carnot cycle

(2)

Fig. 2. Time dependence of intensity of fluorescence coming from a single cluster

The fluorescence of B in the solution could not be detected under the experimental conditions. The

Problem 11. The Prussian blue

Scheme 1

H

Epimer of turneforcidine at C(7) atom, (

3

In addition to the common-sense safety considerations to which students should have been previously exposed, some specific rules, listed below, must also be followed during the Olympiad.

tasks in advance to ensure the safety of the experiments. This can best be accomplished by having students of ability similar to that of ICh

e 2 6 5 8 T m

IChO-

ATTENTION! *The ammonia solution is corrosive and has a very strong smell! Keep the bottle stoppered when not in use*.

C. Determination of lead

Heat the solution above the precipitate on the hot plate to remove the excess of ammonia, and cool the mixture quickly under the running tap water. Filter the slurry through the glass filter. Keep the filtrate for next step. Wash the filter cake with cold water and then dissolve it in hot 1M H_2SO_4 adding the acid in small portions. Collect the obtained solution in the 100-mL volumetric flask and make it up to the mark with water. Titrate oxalate in the prepared solution (take 10.00 mL aliquots) with 0.0100 M solution of potassium permanganate.

ATTENTION*! Oxalate solutions are toxic. Do not pour the solutions down a sink. Instead, dispose*

Problem 29. Complexometric determination of iron, chromium, and zinc in an alloy

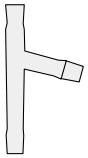
$C_2H_3NaO_2$	Sodium acetate	aqueous solution	H303, H316, H320, H333
$CuSO_4$	Copper(II) sulfate	aqueous solution	H301, H400, H410
$C_7H_6O_6S$	5-Su 13.92 re413.92 a 13.9	aqueous solution	H315, H319

$C_{15}H_{11}N_3$

The Friedel--

Equipment and glassware

through the neck of the flask and apply it to the test paper). **Important!** The temTf1 0 0 2.*r8(Tf8(h)20(e09



Distill the residue under vacuum using the water-jet pump. Collect the fractions into the receiver flasks. Maintain the rate of distillation of about 1-2 drops of the distillate per second. Once the

Questions

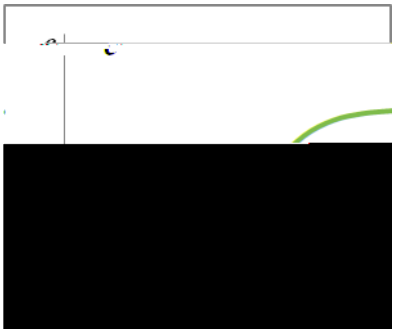
1. What is the role of toluene in the above process?

2. Write do,2c the reaatidon lehe is302m(l)3(2.)] TJETBT1 0 0 1 8.944 701.71 Tm[( )] TJET EMC /P <</M

C. Determination of the reaction orders

1) Adjust the temperature of the thermostated cell unit to 25

1. Choose the plot which corresponds to the autocatalytic reaction (c is the product concentration, and t is time)



a

b c

2. Propose the for N(o)-14(l)1a(e)4( )-143(o)-19(f)34( )-149(t)-21(h)20(e)4( )] TJETBT1 0 0 11004.07 530.81