Practice exam questions for Chapter 8: Alcohols and their derivatives (Paper-saver version)

Question 1 (Bursary 2000 Question 6: modified)

Glucose is a reducing sugar, whereas sucrose is not.

a i Name a simple test (or the reagent involved) that could be used to distinguish between solutions of glucose and sucrose. A

ii State the colour change observed in (i) above if the solution contained the reducing sugar glucose. A

Question 2 (Bursary 1999)

There are four isomeric alcohols of molecular formula $C_4H_{10}O$. The structure and name of one of the isomers is:

Structure: $CH_3CH_2CH_2CH_2OH$
Name: Butan-1-ol

a Draw structures for the three other isomers and name each one. A M

b i Which of the four isomeric alcohols is resistant to oxidation? A

ii Select the word below which is used to classify this alcohol. A
primary secondary tertiary

c Depending on the reaction conditions, oxidation of butan-1-ol can give two different organic products.

i Name the functional group present in each of the two possible products. A

ii If these two products were isolated, describe a test that would be used to distinguish between them. The test should state the reagent(s) used and any observations made. A M

d What reagent would be used to convert butan-1-ol to 1-chlorobutane? A

e Treatment of 1-chlorobutane with alcoholic potassium hydroxide (KOH in ethanol) produces a compound with formula C_4H_8.

i Draw the structure for this C_4H_8 isomer. A

ii Select the word below which describes this type of reaction. A
addition elimination substitution oxidation

When the C_4H_8 compound in **e** is treated with warm, aqueous sulfuric acid the major product is one of the $C_4H_{10}O$ isomers in **a**.

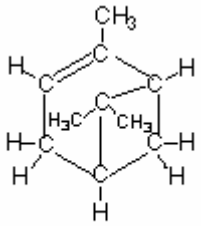
iii Identify (name) which $C_4H_{10}O$ isomer it is. A

Question 3 (Bursary 1995 Section E Question 6)

Identification of organic unknowns

Describe ONE safe test you would carry out in the laboratory that would distinguish between each of the following pairs of compounds. State what you would observe in **each** case. A M E

a **Kerosine** — assumed to be $C_{14}H_{30}$
and
vegetable turpentine — compound mainly of alpha-pinene



alpha-pinene

b **1, 2-ethandiol** — a dialcohol found in car radiator antifreeze
and
thin lubricating oil — composed mainly of liquid alkanes

c **dichloromethane** — a solvent in some paint strippers
and
methylated spirits — composed mainly of ethanol