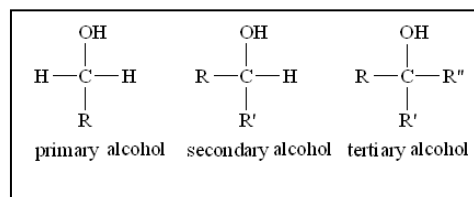


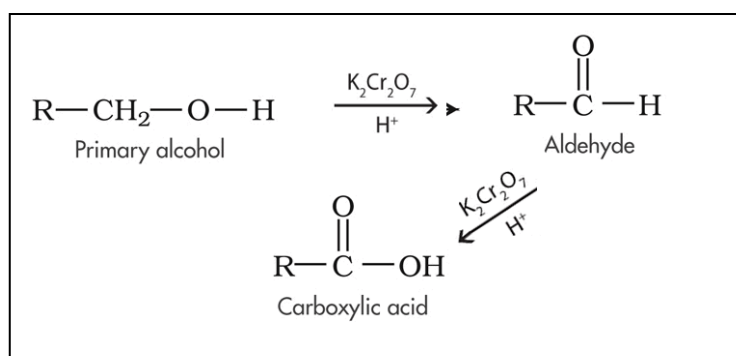
## Lesson 7 Primary, secondary and tertiary alcohols.

[Click](#) to revise oxidation reactions with alcohols

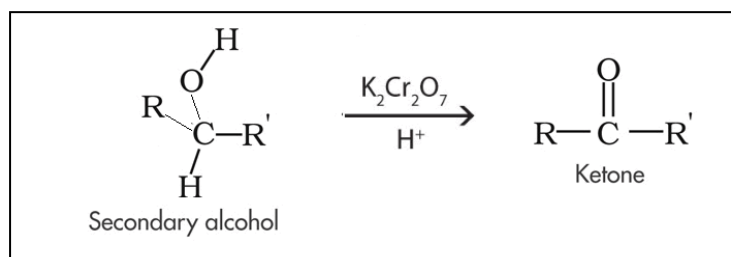
The diagram on the right summarises the structures of the primary secondary and tertiary alcohols.



A primary alcohol can undergo oxidation to produce an aldehyde. The aldehyde can be further oxidised into a carboxylic acid, according to the diagram on the right.

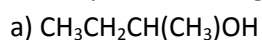


A secondary alcohol can undergo oxidation to produce a ketone, as shown on the right.

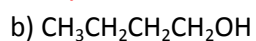


Tertiary alcohols cannot be oxidised.

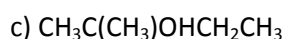
1) Identify the following as a primary, secondary or tertiary alcohol and name it.



*secondary alcohol, butan-2-ol*



*primary alcohol, butan-1-ol*

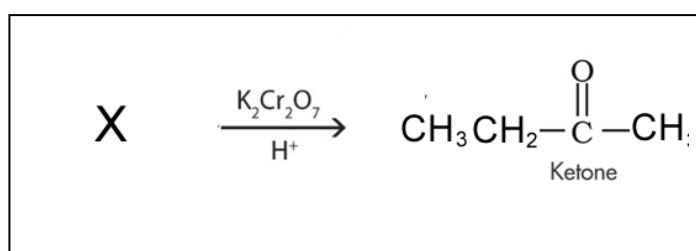


*tertiary alcohol, 2-methyl-butanol-2*

2) Give the

i. semistructural formula for X  
 $\text{CH}_3\text{CHOHCH}_2\text{CH}_3$

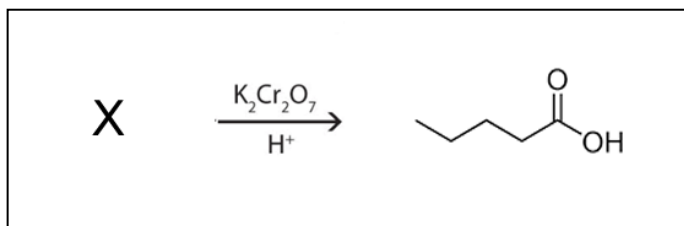
ii. name X *butan-2-ol*



3) Name the product and the reactant of the reaction shown on the right.

*Product = pentanoic acid*

*Reactant = pentanal*



4) Consider the reaction shown on the right.

a) What class of compound is X?

*primary alcohol*

b) Name X

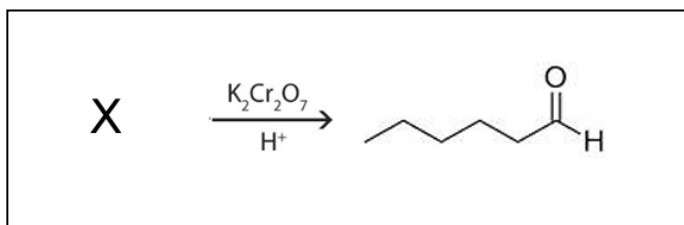
*hexan-1-ol*

c) Give the semistructural formula for X

*$CH_3CH_2CH_2CH_2CH_2CH_2OH$*

d) What class of compound is the product?

*Aldehyde*



5) Consider the reaction shown on the right.

a) What class of compound is X?

*secondary alcohol*

b) Name X

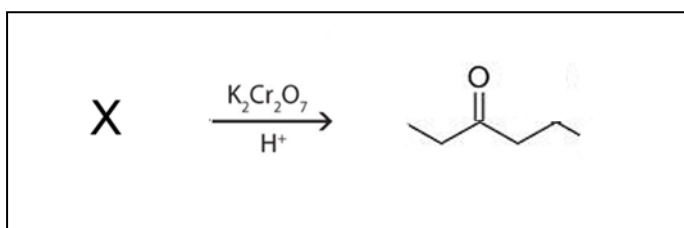
*hexan-3-ol*

c) Give the semistructural formula for X

*$CH_3CH_2CHOHCH_2CH_2CH_3$*

d) What class of compound is the product?

*Ketone*

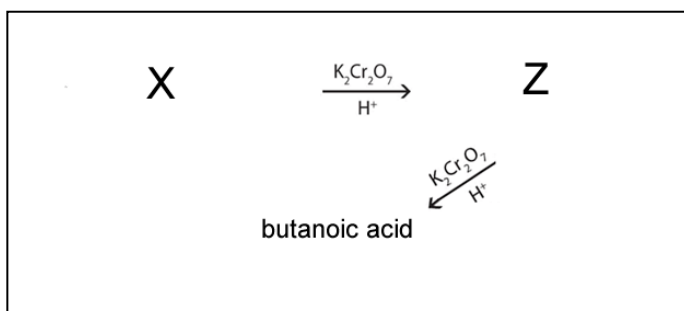


6) Consider the reaction shown on the right.

a) What class of compound is z?

*aldehyde*

b) Name X *butan-1-ol*



c) Give the semistructural formula for X and Z

*$X = CH_3CH_2CH_2CH_2OH$   $Z = CH_3CH_2CH_2CHO$*

7) Retinal is formed from beta-carotene. Both molecules are shown on the right.

a) To what class of compounds does retinal belong to? *Aldehyde*

b) How many chiral centres are present in beta-carotene? *None*

