Year 13 Science: Oxidation, reduction and elimination

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Name the organic product when propan-1-ol is heated under reflux with excess acidified permanganate.

2. Which gives a silver mirror with Tollens' reagent: propanal or propanone?

3. Name the product when butanone is reduced with $NaBH_4$.

4. Name the major product when 2-bromobutane is heated with KOH in ethanol.

5. What colour change is seen when 2-methylpropan-2-ol is warmed with acidified dichromate?

Exam-style question: identifying compound P

Compound P, $C_4H_{10}O$, is an alcohol that exists as enantiomers. P is warmed with acidified dichromate to give compound Q, which gives no silver mirror with Tollens' reagent. P is also heated with concentrated H_2SO_4, giving compounds R (major) and S (minor), both of which decolourise bromine water.

6. Name compound P.

7. Name Q and give the colour change seen as it forms.

8. Explain why Q gives no silver mirror.

9. Name R and S, and explain why R is the major product.

10. Q is reduced with $NaBH_4$. Explain why the product does not rotate plane-polarised light, although P from the bottle did.

Fix the mistake

11. Correct this statement: "Heating propan-1-ol under reflux with dichromate is the way to make propanal."

12. Correct this statement: "With dichromate, the alcohol turns green."

13. Correct this statement: "Butan-2–ol gives but-2–ene only when it is dehydrated."

14. Correct this statement: "$NaBH_4$ oxidises the ketone to an alcohol."