**Glucose**

**Extension questions**

1. What improvements can you suggest to the method you were given for this qualitative test?
2. What changes would you make to obtain semi-quantitative results?
3. Outline a method for a fully quantitative test for reducing sugars.
4. Suggest how you could distinguish a sample of glucose from a sample of maltose using Benedict’s reagent. *[Hint: maltose is a disaccharide reducing sugar]*.

**Proteins**

**Extension questions**

1. What is the chemical composition of Biuret reagent and which of these chemicals are hazardous?
2. Why does the procedure include making observations with the Biuret as a layer on top of the sample before mixing?
3. What is the biochemical explanation for the positive result with the Biuret test?

**Lipids**

**Extension questions**

1. An effective qualitative test must give a clear positive result whenever the substance being tested for is present. This means it avoids ‘false negatives’. It must also not give a positive result due to the presence of some other substance (this would be a false positive).  
   Explain, in terms of their solubility in different solvents and your knowledge of the emulsion test, why you do not see false positives due to:  
   - Monosaccharides and disaccharides  
   - Starch  
   - Nucleic acid  
   - Protein
2. The emulsion test is qualitative. How could it be made the basis for a semi-quantitative test (giving an indication of whether lipids are present at high, medium or low concentration) or even a fully quantitative test for lipids?