**Biochemistry Practical Question Bank: Carbohydrates, Lipids, and Proteins**

**Carbohydrates**

**1. Qualitative Tests**

* What is the principle behind the Molisch's test?
* What is the role of concentrated sulfuric acid in the Molisch's test?
* Why is Fehling's solution used to test for reducing sugars?
* What is the role of Benedict's reagent in the test for reducing sugars?
* What is the principle behind the iodine test for starch?
* What is the color change observed in a positive iodine test for starch?

**2. Quantitative Tests**

* Explain the principle of the Benedict's quantitative test for reducing sugars.
* What is the significance of the color intensity in the Benedict's quantitative test?
* How can you determine the amount of reducing sugar present in a sample using the Benedict's quantitative test?

**3. Enzymatic Reactions**

* What is the role of amylase in starch digestion?
* How can you measure the rate of starch hydrolysis by amylase?
* What factors affect the rate of enzyme-catalyzed reactions?

**Lipids**

**1. Qualitative Tests**

* What is the principle behind the solubility test for lipids?
* What is the role of Sudan IV in the fat test?
* How can you differentiate between saturated and unsaturated fats using the bromine test?

**2. Quantitative Tests**

* Explain the principle of the acid-base titration method for determining the acid value of a fat.
* What is the significance of the saponification value of a fat?
* How can you determine the iodine value of a fat?

**Proteins**

**1. Qualitative Tests**

* What is the principle behind the Biuret test for proteins?
* What is the role of copper sulfate in the Biuret test?
* What is the principle behind the Ninhydrin test for amino acids?
* How can you differentiate between proteins and peptides using the Biuret test?

**2. Quantitative Tests**

* Explain the principle of the Kjeldahl method for protein determination.
* What is the role of sulfuric acid in the Kjeldahl method?
* How can you determine the protein content of a sample using the Lowry method?

**Additional Questions:**

* How can you distinguish between monosaccharides and disaccharides using chemical tests?
* What are the factors affecting the rate of enzyme-catalyzed reactions?
* How can you determine the primary, secondary, tertiary, and quaternary structures of a protein?
* What are the different types of lipids and their functions in biological systems?
* How can you separate and purify proteins using chromatographic techniques?