# Module 1: Cell and Molecular Biology

## 1.1.1: Aspects of Biochemistry

**1** Many small organisms are able to skate over the surface of water. Which property of water allows them to do so?

**(A)** Adhesion with other molecules (A)

**(B)** Cohesion of water molecules (B)

**(C)** Low viscosity (C)

**(D)** Low surface tension (D)

**2** Why does sucrose give a negative result when heated with Benedict's solution?

**(A)** No hydroxyl group is present in the sugar (A)

**(B)** The carbonyl group and the keto group are not free to react (B)

**(C)** Sucrose is a disaccharide (C)

**(D)** Sucrose is a complex sugar (D)

**3** What type of bonds are present between glucose residues within a molecule of amylopectin?

**(A)** α 1-4 glycosidic bonds (A)

**(B)** β 1-4 glycosidic bonds (B)

**(C)** α 1-4 and α 1-6 glycosidic bonds (C)

**(D)** β 1-4 and β 1-6 glycosidic bonds (D)

**4** Figure 1.1 represents a triglyceride.

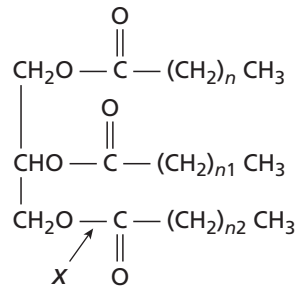


**Figure 1.1**

What type of bond is formed at the point labelled *X*?

**(A)** Ester bond (A)

**(B)** Glycosidic bond (B)

**(C)** Hydrogen bond (C)

**(D)** Phosphodiester bond (D)

**5** Using the diagram of a dipeptide in Figure 1.2, indicate which bond is broken on hydrolysis to form the amino acids.

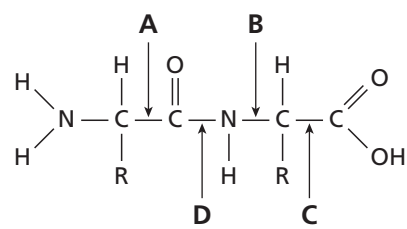


**Figure 1.2**

**(A)** A (A)

**(B)** B (B)

**(C)** C (C)

**(D)** D (D)

**6** Which level of protein structure is NOT maintained by covalent bonds?

**(A)** Primary Ⓐ

**(B)** Secondary Ⓑ

**(C)** Tertiary Ⓒ

**(D)** Quaternary Ⓓ

**7** Which of the following bonds is responsible for the secondary level of protein structure?

**(A)** Ionic bonds Ⓐ

**(B)** Hydrogen bonds Ⓑ

**(C)** Peptide bonds Ⓒ

**(D)** S–S bonds Ⓓ

**8** Which test will give a positive result when carried out on a polymer of the molecule shown in Figure 1.3?

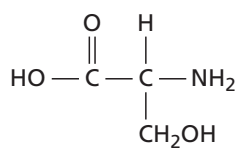


**Figure 1.3**

**(A)** Adding iodine in potassium iodide Ⓐ

**(B)** Adding copper sulfate and potassium hydroxide Ⓑ

**(C)** Heating with Benedict's reagent Ⓒ

**(D)** Shaking with alcohol then pouring into cold water Ⓓ

**9** Which factor ultimately determines the shape of the protein molecule?

**(A)** Amino acid sequence Ⓐ

**(B)** Ionic bonding Ⓑ

**(C)** Hydrogen bonding Ⓒ

**(D)** Hydrophobic interactions Ⓓ

**10** Haemoglobin is a globular protein comprising two beta and two alpha subunits. Which structural levels are exhibited by haemoglobin?

**(A)** Primary and secondary Ⓐ

**(B)** Primary and tertiary Ⓑ

**(C)** Secondary, tertiary and quaternary Ⓒ

**(D)** Primary, secondary, tertiary and quaternary Ⓓ

## 1.1.2: Cell Structure

**1** The resolution of a microscope is the

**(A)** wavelength of the rays used to view the object under the microscope Ⓐ

**(B)** ability to distinguish two objects as being separate from each other Ⓑ

**(C)** ability to show a clear image of the object viewed under the microscope Ⓒ

**(D)** greatest magnification that can be achieved under the microscope Ⓓ