

Biological Molecules

Carbohydrates:

- 1) What are the different types of disaccharides and what are they made of? (6)
- 2) Describe the test for non-reducing sugars and give the result? (3)
- 3) What are the differences between glycogen and cellulose? (4)
- 4) What is the general formula for monosaccharides? (1)
- 5) Give 4 functions of carbohydrates? (4)
- 6) Describe how glycogen is made starting from α glucose? (3)
- 7) Why is glycogen a better energy storage molecule than cellulose? (3)
- 8) Explain why carbohydrates are better at providing energy in the short term than lipids? (3)
- 9) Draw a beta glucose molecule and state how it is different to alpha glucose? (3)
- 10) Why is glucose better at providing energy in the short term than glycogen? (3)
- 11) What type of bonds are present in amylopectins? (2)
- 12) What is the test for starch and what would be the result? (2)
- 13) What is lactose intolerance? What type of sugars should be consumed in this case? (2)
- 14) What properties of cellulose make it suitable for use in cellulose cell walls? (4)
- 15) Explain what type of reaction would be needed to break down glycogen and why? (2)
- 16) Give 3 types of tissues where glycogen is abundant and state why? (3)
- 17) The movement of water is not affected by glycogen but it is by glucose. Explain why? (2)
- 18) What is a cellulose microfibril? (2)
- 19) Why is chitin similar and yet different to cellulose? (2)
- 20) What are the 3 types of monosaccharides? (3)

Lipids:

- 1) Draw the structure of a triglyceride and a phospholipid (5)
- 2) What are the functions of lipids? (5)
- 3) Explain why lipids release more energy than carbohydrates for the same mass? (2)
- 4) Describe the biochemical test for lipids and the result? (3)
- 5) What are HDLs and LDLs and why are they important? (2)
- 6) What are the differences between saturated and unsaturated fatty acids? (2)
- 7) What are the similarities and differences between phospholipids and triglycerides? (4)
- 8) What is the name of the bond formed in a triglyceride and how is it formed? (2)
- 9) What do the terms hydrophilic and hydrophobic mean? (2)

- 10) Which type of lipid molecule do steroids contain and draw the structure of this lipid molecule? (3)

Proteins

- 1) What are the differences between fibrous and globular proteins? (4)
- 2) Describe the tertiary structure of a protein? (3)
- 3) Why does haemoglobin have a quaternary structure? (3)
- 4) Give 2 examples each of fibrous and globular proteins? (4)
- 5) What are the functions of proteins? (8)
- 6) Explain why proteins are not a good energy source? (2)
- 7) Draw the basic structure of an amino acid below? (2)
- 8) Using a diagram, explain how a peptide bond is formed? (3)
- 9) What makes amino acids amphoteric and water soluble? (3)
- 10) Explain the primary and secondary structure of a protein molecule? (3)
- 11) What is the biochemical test for proteins, describe it and give the result? (3)
- 12) Differences in proteins amongst organisms are common. Explain why? (2)
- 13) What are the differences between haemoglobin and collagen? (4)
- 14) What is the structure of collagen and how does it relate to its function? (3)

Water

- 1) Describe the structure of a water molecule? (2)
- 2) What makes water a good or universal solvent? (2)
- 3) Relate the structure, properties and functions of water in living organisms? (10)
- 4) What properties of water make it suitable as a transport medium? (4)
- 5) How does water's specific heat capacity allow aquatic organisms to survive? (3)
- 6) What is water's latent heat of vapourisation important? (2)
- 7) Describe the forces of cohesion, tension and adhesion? (3)
- 8) Why is the hydrogen bonding ability of water important? (3)
- 9) What is meant by high surface tension and how does water provide this ability? (3)
- 10) Ice is less dense than water. Why is this property important? (3)
- 11) Water is an effective buffer. Explain why? (2)