| Theme | Topic | You should be able to: | Checklist | Comments |
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| **B. Biological molecules** | Structure of carbohydrates, lipids and proteins and their roles in living organisms | • *carry out tests for reducing and non-reducing sugars (including semi-quantitative use of the Benedict's test), the iodine in potassium iodide solution test for starch, the emulsion test for lipids and the biuret test for proteins;<br>• describe the ring forms of α-glucose and β-glucose (candidates should be familiar with the terms *monomer*, *polymer* and *macromolecule*);<br>• describe the formation and breakage of a glycosidic bond with reference both to polysaccharides and to disaccharides including sucrose;<br>• describe the molecular structure of polysaccharides including starch (amylose and amylopectin), glycogen and cellulose and relate these structures to their functions in living organisms;<br>• describe the molecular structure of a triglyceride and a phospholipid and relate these structures to their functions in living organisms;<br>• describe the structure of an amino acid and the formation and breakage of a peptide bond;<br>• explain the meaning of the terms *primary structure*, *secondary structure*, *tertiary structure* and *quaternary structure* of proteins and describe the types of bonding (hydrogen, ionic, disulfide and hydrophobic interactions) that hold the molecule in shape;<br>• describe the molecular structure of haemoglobin as an example of a globular protein, and of collagen as an example of a fibrous protein and relate these structures to their functions (the importance of iron in the haemoglobin molecule should be emphasised). A haemoglobin molecule is composed of 2 alpha (*α*) chains and 2 beta (*β*) chains, although when describing the chains the terms *α*-globin and *β*-globin may be used. There should be a distinction between collagen molecules and collage fibres); | | |
| | Water and living organisms | • describe and explain the roles of water in living organisms and | | |

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| | | as an environment for organisms. | | |