1. The unit molecule of a protein is
   A. glucose.
   B. glycerol.
   C. a fatty acid.
   D. an amino acid.

2. Fatty acids containing double bonds are found in
   A. proteins.
   B. saturated lipids.
   C. polysaccharides.
   D. unsaturated lipids.

3. The bending and folding of a protein molecule would produce a
   A. tertiary structure.
   B. primary structure.
   C. secondary structure.
   D. linear sequence of amino acids.

4. The above reaction would take place during the
   A. digestion of starch.
   B. formation of an enzyme.
   C. storage of fatty acids as lipids.
   D. release of energy from glucose.

5. Some biologically-important molecules dissolve easily in water because the water molecule is
   A. polar.
   B. organic.
   C. saturated.
   D. a polymer.

6. Which of the following differences between acids and bases is correct?
   A. Acids are harmful, bases are not.
   B. Acids lower the pH, bases raise the pH.
   C. Acids release amino groups, bases release glycerol.
   D. Acids release hydroxide ions, bases release hydrogen ions.
7. Which of the following is a function of some proteins?
   
   A. Emulsify fats.
   B. Make up genes.
   C. Make up cell walls.
   D. Speed up chemical reactions.

   Use this diagram to answer question 8.

   ![Diagram](image)

8. An example of a specific process that occurs in a manner similar to c → a in the diagram above is

   A. dipeptides forming into polypeptides.
   B. nucleotides joining together to form DNA.
   C. glycerol and fatty acids forming a neutral fat.
   D. glycogen molecules being converted into glucose molecules.

Use this diagram to answer question 9.

![Diagram](image)
9. This molecule is the result of the hydrolysis of
A. bile. chylomicron
B. testosterone. steroid
C. hemoglobin.
D. phospholipid. lipid

10. Which of the following represents a lipid molecule?

Written response
1. State a different function for each of the following in the human body. (3 marks: 1 mark each)

Monosaccharides: energy (short term)

Amino acids: to build protein (monomer of polypeptides)

Glycogen: animal storage of glucose (liver)
2. Define and give an example of a synthesis reaction. (2 marks)

Monomers + monomer → polymer + H₂O
3 fatty acids + 1 glycerol → neutral + 3H₂O

3. List three major functions of proteins. (3 marks)
- Structural (hair, nails)
- Enzymes (speed up chemical rxn)
- Hormones (chemical messengers)
- Muscles (required for muscle movement)

4. Describe the structural difference between starch and cellulose. (2 marks)

Both starch is a polymer of glucose with few side branches (E: storage)
only cellulose is a linear sequence of glucose.

5. How is the structure of ATP related to its function? (2 marks)

- ATP has 3 phosphate groups, high E bond between phosphates when energy is needed, one of bonds breaks between phosphates & releases E. ATP → ADP + P + E

6. Where are steroids and phospholipids found in the body? (2 marks)

- Made by S.E.R. found in testes, ovaries etc.
- Phospholipids are in cell membrane

7. Why are steroids and phospholipids important in the body? (2 marks)

Steroid hormones stimulate development & maturation of primary sex organs & secondary sex characteristics (e.g.) deep male voice

In cell membrane, form a barrier around cell that regulates movement of molecules in & out of cell.