Class 10 Science · Chapter 5: Life Processes

Answer key and marking scheme · 20 marks · about 40 minutes · based on NCERT

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1. Carbohydrate that a green plant does not use at once is stored as its internal energy reserve in the form of [1]

(a) glucose (b) glycogen
(c) starch (d) cellulose

Answer: (c) Unused carbohydrate is stored as starch, the plant's energy reserve. Glycogen is the reserve in which animals store energy.

2. Salivary amylase in the mouth converts [1]

(a) proteins into amino acids (b) starch into simple sugar
(c) fats into fatty acids (d) emulsified fats into glycerol

Answer: (b) Saliva contains salivary amylase, which breaks starch, a complex molecule, into simple sugar.

3. In a person whose bile duct is blocked, the digestion of which food is affected most? [1]

(a) Starch (b) Proteins
(c) Fats (d) Simple sugars

Answer: (c) Bile salts break large fat globules into smaller ones so that lipase can act efficiently. Without bile the fat stays in large globules and is poorly digested.

4. The villi on the inner lining of the small intestine mainly [1]

(a) churn the food with acid (b) secrete bile juice
(c) produce pepsin (d) increase the surface area for absorption

Answer: (d) Villi are finger-like projections that increase the surface area for absorption and are richly supplied with blood vessels.

5. In the first step of respiration, glucose is broken down in the cytoplasm into pyruvate. How many carbon atoms does one pyruvate molecule have? [1]

(a) Six (b) Three
(c) Two (d) One

Answer: (b) Glucose is a six-carbon molecule and pyruvate, formed from it in the cytoplasm, is a three-carbon molecule.

6. Distinguish between saprophytic and parasitic nutrition, giving one example of each. [2]

Saprophytes break food down outside the body and then absorb it, e.g. bread mould, yeast, mushroom. Parasites derive nutrition from a living plant or animal without killing it, e.g. cuscuta, tick, louse, leech, tape-worm.

- saprophytic: breaks food down outside the body and absorbs it, with one example (bread mould, yeast or mushroom) (1)
- parasitic: feeds on a living host without killing it, with one example (cuscuta, tick, louse, leech or tape-worm) (1)

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7. How do the guard cells open a stomatal pore? Why does a plant close its stomata when it does not need carbon dioxide? [2]

Water flows into the guard cells, they swell and the pore opens (it closes when they shrink). Large amounts of water can be lost through open stomata, so the plant closes them when carbon dioxide is not needed for photosynthesis.

- guard cells take in water and swell, opening the pore (1)
- closing prevents the loss of large amounts of water (1)

8. How does Amoeba take in a food particle, and what happens to the material it cannot digest? [2]

Temporary finger-like extensions of the cell surface fuse over the food particle to form a food-vacuole, where it is broken down and the simple substances diffuse into the cytoplasm. Undigested material is moved to the cell surface and thrown out.

- finger-like extensions surround the particle and form a food-vacuole (1)
- undigested matter is moved to the surface and thrown out (1)

9. Explain (a) why plants can manage with relatively slow transport systems, (b) why root pressure alone cannot raise water to the top of a tall tree, and (c) what provides the main upward force during the day. [3]

(a) Plants do not move and much of the plant body is dead tissue, so their energy needs are low. (b) Root pressure by itself is unlikely to be enough to move water over the heights seen in plants. (c) By day, with the stomata open, evaporation of water from leaf cells creates a suction, the transpiration pull, which pulls water up the xylem from the roots.

- (a) no movement and much dead tissue, so low energy needs (1)
- (b) root pressure is too small for such heights (1)
- (c) transpiration pull: evaporation from leaves creates suction through the xylem (1)

10. Give the reason for each of the following: (a) food is crushed by the teeth and wetted by saliva; (b) the muscles of the food-pipe contract rhythmically; (c) a sphincter muscle guards the exit of the stomach. [3]

(a) Crushing gives small particles of uniform texture, and saliva wets the food so its passage along the soft lining of the canal is smooth. (b) These peristaltic movements push the food forward from the mouth to the stomach. (c) The sphincter releases food into the small intestine in small amounts.

- (a) small uniform particles; smooth passage along the soft lining (1)
- (b) peristalsis pushes food along to the stomach (1)
- (c) food released into the small intestine in small amounts (1)

11. Trace the path of de-oxygenated blood from the vena cavae until it leaves the heart for the lungs, naming the chambers and the vessel. What do the heart valves do along this path? [3]

De-oxygenated blood from the body enters the right atrium through the vena cavae as the atrium relaxes. The atrium contracts and the right ventricle dilates to receive the blood. The right ventricle contracts and pumps it through the pulmonary artery to the lungs. Valves stop the blood from flowing backwards when the atrium or ventricle contracts.

- vena cavae to right atrium, then to right ventricle (1)
- right ventricle pumps through the pulmonary artery to the lungs (1)
- valves prevent backflow when the chambers contract (1)