CLASS 11 BIOLOGY EXTRA QUESTIONS

Class 11 Biology Chapter 16 Excretory Products and their Elimination – Extra Questions with Answers

Extra practice questions for Class 11 Biology Chapter 16 (Excretory Products and their Elimination), beyond the textbook. These Class 11 Biology Chapter 16 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. What nitrogenous waste do birds excrete?
Ans: Uric acid (uricotelism).

Q2. What is the functional unit of the kidney called?
Ans: Nephron.

Q3. Where does most reabsorption of glucose and water occur in the nephron?
Ans: Proximal convoluted tubule (PCT).

Q4. Name the hormone that increases water reabsorption in the kidney.
Ans: ADH (antidiuretic hormone).

Q5. What structure in the nephron maintains the medullary osmotic gradient?
Ans: Loop of Henle (with vasa recta).

Short Answer Questions (2–3 marks)

Q6. Describe the three main steps of urine formation.
Ans: Glomerular filtration (blood filtered into Bowman's capsule), reabsorption (useful substances returned to blood), and secretion (additional wastes actively added to the filtrate).

Q7. Why is ammonia excretion suitable for aquatic animals but not terrestrial animals?
Ans: Ammonia is highly toxic and requires large amounts of water for safe dilution and excretion, readily available to aquatic animals but not terrestrial animals with limited water access.

Q8. What is the role of the renin-angiotensin-aldosterone system (RAAS)?
Ans: It regulates blood pressure and volume by promoting sodium/water reabsorption and vasoconstriction, activated in response to low blood pressure/volume.

Higher-Order Thinking / Application Questions

Q9. Explain why birds and reptiles excrete nitrogenous waste as uric acid (uricotelism) rather than urea, connecting this adaptation specifically to the requirements of egg-laying (oviparous) reproduction, in addition to general water conservation.
Ans: While water conservation is a major advantage of uricotelism (uric acid is a semi-solid, relatively non-toxic paste excreted with minimal water loss, unlike urea/ammonia), uricotelism carries an additional advantage for oviparous animals like birds and reptiles. Since a developing embryo inside a shelled egg is completely enclosed and cannot excrete waste externally (unlike a mammalian embryo, which uses the placenta), it must store metabolic waste within the egg throughout development. If it excreted soluble, toxic ammonia or urea, waste could accumulate to harmful concentrations or disturb osmotic balance within the egg's limited fluid space. Uric acid is only slightly soluble and can precipitate as a relatively harmless insoluble solid, allowing the embryo to safely store waste within the egg without toxic buildup, making uricotelism not just a water-conservation adaptation but a critical requirement for successful shelled-egg development.

Q10. Explain how the counter-current mechanism in the loop of Henle and vasa recta enables the mammalian kidney to produce urine more concentrated than blood plasma, describing the roles of the descending and ascending limbs.
Ans: The loop of Henle has a descending limb (permeable to water, not salt) and an ascending limb (impermeable to water, actively transports salt), arranged in a hairpin counter-current configuration. As filtrate flows down the descending limb, water passively exits into the increasingly salty medullary interstitium, concentrating the filtrate. At the bottom, filtrate enters the ascending limb, where salt is actively pumped out while the limb stays water-impermeable, diluting the filtrate while reinforcing the medullary salt gradient. This creates a self-reinforcing concentration gradient in the medulla, maintained by the similarly counter-current vasa recta blood flow. This allows the collecting duct, passing through this concentrated medullary environment (especially under ADH influence), to reabsorb additional water, producing urine considerably more concentrated than blood plasma, essential for water conservation.

Class 11 Biology Chapter 16 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 11 Biology Chapter 16 Solutions and Class 11 Biology Chapter 16 Revision Notes.

See also: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14 | Chapter 15 | Chapter 16

Practice more: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14 | Chapter 15

Quick revision: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6 | Chapter 7 | Chapter 8 | Chapter 9 | Chapter 10 | Chapter 11 | Chapter 12 | Chapter 13 | Chapter 14 | Chapter 15