CLASS 11 BIOLOGY EXTRA QUESTIONS

Class 11 Biology Chapter 6 Anatomy of Flowering Plants – Extra Questions with Answers

Extra practice questions for Class 11 Biology Chapter 6 (Anatomy of Flowering Plants), beyond the textbook. These Class 11 Biology Chapter 6 important questions are handy for last-minute exam practice.

Contents

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Very Short Answer Questions (1 mark)

Q1. Name the tissue responsible for conduction of water in plants.
Ans: Xylem.

Q2. Which cells provide flexible support in young, growing plant parts?
Ans: Collenchyma.

Q3. Is sclerenchyma living or dead at maturity?
Ans: Dead.

Q4. What produces secondary xylem and phloem?
Ans: Vascular cambium.

Q5. Are vascular bundles scattered or in a ring in dicot stems?
Ans: In a ring.

Short Answer Questions (2–3 marks)

Q6. Differentiate between meristematic and permanent tissue.
Ans: Meristematic tissue consists of actively dividing, undifferentiated cells responsible for growth; permanent tissue consists of differentiated cells that have lost the ability to divide and are specialized for specific functions.

Q7. List the components of xylem and their functions.
Ans: Tracheids and vessels (water conduction), xylem fibres (mechanical support), xylem parenchyma (storage).

Q8. What is the difference between exarch and endarch xylem?
Ans: In exarch xylem (roots), protoxylem is towards the periphery and metaxylem towards the centre; in endarch xylem (stems), protoxylem is towards the centre and metaxylem towards the periphery.

Higher-Order Thinking / Application Questions

Q9. Explain why dicot stems are capable of secondary growth (increasing in girth over years, as seen in trees) while typical monocot stems are not, connecting this to the arrangement of vascular tissue and the presence/absence of cambium.
Ans: In dicot stems, the vascular bundles are arranged in an organized ring pattern, and crucially, each vascular bundle is ‘open’, meaning it contains a strip of cambium (a lateral meristematic tissue) located between the xylem and phloem. This vascular cambium, along with the interfascicular cambium that forms between adjacent bundles, together create a complete ring of active dividing meristematic tissue around the stem, which can continuously produce new secondary xylem (inward) and secondary phloem (outward) year after year, causing the characteristic annual increase in girth seen in dicot trees (visible as growth rings). In contrast, typical monocot stems have vascular bundles that are scattered throughout the ground tissue (not arranged in a ring) and are ‘closed’, meaning they lack any cambium between the xylem and phloem. Without this meristematic cambium tissue, monocot stems have no mechanism to continuously produce new vascular tissue, so they cannot undergo secondary growth and thus generally do not increase in girth beyond their primary growth, which is why most monocots (like grasses, palms) do not form the

thick, woody trunks with visible growth rings that are characteristic of many dicot trees.

Q10. Explain how the anatomical differences between dicot and monocot roots (specifically the number of xylem arms and the presence/absence of pith) can be used by a botanist to determine, from a cross-section alone, whether an unidentified root sample belongs to a dicot or monocot plant.
Ans: When examining a transverse section (cross-section) of a root under a microscope, a botanist can look at two key anatomical features to distinguish dicot from monocot roots. First, the number of xylem arms (protoxylem groups) radiating from the centre: dicot roots typically show a limited number of xylem arms, usually ranging from 2 to 6 (described as diarch to hexarch), whereas monocot roots typically show many more xylem arms, often more than six (described as polyarch). Second, the presence of a well-developed, prominent pith (parenchymatous tissue) at the very centre of the root: monocot roots usually have a large, well-developed central pith, while in dicot roots, the pith is typically small, reduced, or sometimes entirely absent, with the xylem often extending to occupy the very centre of the root in a star-like (stellate) pattern. By observing whether the xylem arms are few (2-6) with a small/absent central pith (suggesting dicot) versus many (polyarch) with a large, distinct central pith (suggesting monocot), a botanist can reliably classify an unidentified root cross-section without needing to see the whole plant's external morphology.

Class 11 Biology Chapter 6 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the Class 11 Biology Chapter 6 Solutions and Class 11 Biology Chapter 6 Revision Notes.

See also: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5 | Chapter 6

Practice more: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5

Quick revision: Chapter 1 | Chapter 2 | Chapter 3 | Chapter 4 | Chapter 5