Morphology of Flowering Plants

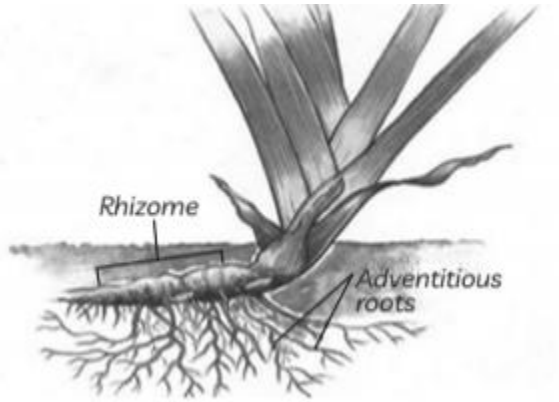
Assertion Reason Questions

Given below are two statements labelled as Assertion (A) and Reason (R). Select the most appropriate answer from the options given below:

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

1. Assertion (A): Adventitious roots develop from the radicle.
Reason (R): These adventitious adventitious roots are usually found in the monocots.

Ans. (d) A is false but R is true.
Explanation: Adventitious roots develop from the parts of the plant other than the radicle. These are usually found in the monocots.



2. Assertion (A): Assimilatory roots can perform photosynthesis.
Reason (R): Chlorophyll is present in assimilatory roots.

Ans. (a) Both A and R are true and R is the correct explanation of A.
Explanation: Assimilatory roots can perform photosynthesis due to presence of chlorophyll. They are also known as green roots.

3. Assertion (A): Stem is negatively geotropic and positively phototropic.
Reason (R): Stem grows away from the soil towards sunlight.

Ans. (a) Both A and R are true and R is the correct explanation of A.
Explanation: Stem is the aerial part of the plant body which develops from plumule and

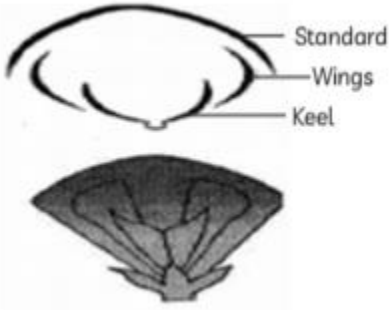
epicotyl of germinating seeds. It is negatively geotropic and positively phototropic because it grows away from the soil towards sunlight.

4. Assertion (A): Perianth is the outer part of a flower in which the calyx and corolla are undifferentiated and combined.
Reason (R): Single unit of Perianth is called tepal.

Ans. (a) Both A and R are true and R is the correct explanation of A.
Explanation: When corolla and calyx are fused and are not distinct it is called perianth (also termed as perigonium). The individual leaflike parts are termed as tepals.

5. Assertion (A): In potato plants, the corolla shows vexillary aestivation.
Reason (R): Corolla of the potato plant consists of five petals which are united.

Ans. (d) A is false but R is true.
Explanation: Potato plant belongs to the family Solanaceae in which corolla consists of five petals which are united and show valvate aestivation. In this aestivation, margins of adjacent petals or sepals touch each other without overlapping.



6. Tomatoes belong to the Solanaceae family. There are 7,500 varieties of tomatoes, including beefsteak, plum tomatoes, pear tomatoes, cherry tomatoes and grape tomatoes. Tomatoes require cross- pollination for growth. China, India, the U.S., Turkey, Egypt, Iran, Italy and Uzbekistan are among the largest producers of tomatoes. Israel exports more than USD 2 billion worth of produce, tomatoes are its fourth-largest commodity and is among the world's top developers of better-looking, better-tasting, disease-resistant, and more nutritious varieties.

Assertion (A): The Androecium of the Solanaceae family is epipetalous.

Reason (R): Stamens are attached to Perianth in epipetalous condition.

Ans. (c) A is true but R is false.

Explanation: The androecium of the Solanaceae family is epipetalous. It is the condition in which stamens are attached to petals. While in epiphyllous condition, stamens are attached to perianth.