Solutions

S1. Ans.(b)

The phenomenon of formation of interfascicular cambium from fully differentiated parenchyma cells is called dedifferentiation.

S2. Ans.(b)

Auxin does not affect mature monocot plants. In monocots, especially grasses show limited translocation and cause rapid degradation of external auxin.

S3. Ans.(a)

Sugarcanes store carbohydrate as sugar in their stems. Spraying sugarcane crop with gibberellins increases the length of the stem, thus increasing the yield.

S4. Ans.(c)

Spraying juvenile conifers with gibberellins (GA_3) hastens the maturity period, thus leading to early seed production.

S5. Ans.(d)

Ethylene promotes rapid internode/ petiole elongation in deep water rice plants.

S6. Ans.(c)

This is a key characteristic of plants. So, the statement that plant growth is generally determinate is incorrect.

S7. Ans.(d)

The ability of plant to follow different pathways and produce different structures in response to environment is called plasticity.

During differentiation, cells lose their ability to divide and form permanent cell.

The process where the differentiated cells again lose the ability to divide and form permanent cells is called redifferentiation.

S8. Ans.(c)

- Cytokinins are derived from adenine.

- Auxins are derivatives of indole compounds.

- Abscisic acid is derived from carotenoids.

- Ethylene is derived from methionine.

S9. Ans.(d)

Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called plasticity e.g. heterophylly in cotton, coriander and larkspur. In such plants, leaves of juvenile plant are different in a shape from those in mature plants.

S10. Ans.(b)

Ethylene is a gaseous plant hormone. It induces development of adventitious roots on various types of cutting. It promotes the development of lateral roots and growth of root hairs. Cytokinin helps to overcome the apical dominance. Auxin is used to kill dicot weeds. Gibberellin speeds up the malting process.

S11. Ans.(c)

Ethylene increases the number of female flowers and fruits in certain plants such as cucumber. Gibberellins are used to increase the size of fruits in some plants.

S12. Ans.(c)

The response of plants to periods of day/night is termed as photoperiodism. The hormonal substance responsible for flowering is formed in the leaves, subsequently migrating to the shoot apices and modifying them into flowering apices.

Photoperiodism helps in studying the response of flowering in various crop plants with respect to the duration of exposure to light.

S13. Ans.(b)

The synthetic auxin 2, 4–D is used to destroy weeds in a monocot field.

S14. Ans.(b)

The ability of plants to form morphologically different structures by following different pathways in response to environment or phases of life is called plasticity.

S15. Ans.(d)

The log phase, also known as the exponential phase, is a period of rapid plant development. The number of cells has increased significantly, resulting in an increase in height and biomass.

S16. Ans.(d)

Effect of inhibitory substances can be removed by subjecting the seeds to chilling conditions or by application of certain chemicals like gibberellic acid and nitrates.

S17. Ans.(a)

Sugarcane stems store carbohydrate in the form of sugar. Spraying gibberellins on sugarcane crops improves stem length, resulting in output gains of up to 20 tonnes per acre.

S18. Ans.(b)

Fruit ripening is aided greatly by ethylene.

Herbicides containing auxins are commonly used.

The herbicide 2, 4-D, which is commonly used to eliminate dicotyledonous weeds, has no effect on mature monocotyledonous plants.

Bolting (internode elongation just prior to flowering) is promoted by gibberellins in beets, cabbages, and many other rosette-forming plants.

ABA enhances plant tolerance to diverse stressors by stimulating the closure of stomata in the epidermis. As a result, it's also known as the stress hormone.

S19. Ans.(d)

Skoog and Miller later discovered and crystallised the cytokinesis-promoting active component, which they named kinetin.

S20. Ans.(b)

The effect of inhibitory compounds can be reduced by freezing the seeds or using chemicals like gibberellic acid and nitrates. Seed dormancy can also be overcome by altering environmental variables like as light and temperature.

S21. Ans.(a)

Auxin, a plant hormone, causes pineapple to blossom. In pineapple, ethylene is employed to synchronise blooming and fruit set.

S22. Ans.(d)

Photoperiodic stimulation is sensed by plant leaves during flowering.

S23. Ans.(c)

Auxins help to keep leaves and fruits from falling off too soon.

In tomatoes, NAA prevents fruit drop; in citrus, 2, 4-D prevents fruit drop.

S24. Ans.(a)

A-(iii) B-(iv) C-(ii) D-(i)

S25. Ans.(d)

Auxin (Greek 'auxein': to grow) was extracted from the tips of coleoptiles of oat seedlings by F.W. Went.

Auxin was discovered in human urine for the first time.

S26. Ans.(d)

Auxin aids in the production of roots, while cytokinin aids in the development of shoots.

S27. Ans.(c)

A bioassay is a method of determining whether a drug has the ability to cause a growth response in a living plant or a component of one. Some bioassays for determining auxin activity include the Avena curvature test and the root growth inhibition test.

S28. Ans.(c)

Numerous annual plants have an S-shaped or sigmoid growth curve. It is divided into three phases: the lag phase (slow), the log phase exponential), and the stable phase. It's a common occurrence in all cells.

S29. Ans.(b)

In the presence of light, auxin synthesis occurs more quickly and in bigger amounts in the part of the plant which is in the dark. Auxin translocations are polar.

S30. Ans.(d)

The avena curvature test is based on the discovery that the auxin concentration in an agar block determines the curvature produced in 0° at coleoptile. Auxin concentrations of 150 g/L cause 10° curvature.

S31. Ans.(a)

It demonstrated polar movement of Auxins.

S32. Ans.(d)

Etiolation: Seedling when grown in the dark, becomes pale to white in colour. Because of the lack of chlorophyll.

S33. Ans.(b)

ABA boosts a plant's resistance to a variety of stressors.

S34. Ans.(a)

Gibberellin causes aleurone cells to release an enzyme that allows stored food in seeds to be broken down.