## **Plant Growth and Development**

**1. Assertion (A):** Plants show open form of growth.

**Reason (R):** Plants retain their meristematic activity at certain locations, throughout their life.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **2. Assertion (A):** Swelling of piece of wood when placed in water is not a growth.

**Reason (R):** Swelling of piece of wood when placed in water is an imbibition.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **3. Assertion (A):** A sigmoid curve is characteristic of plants growing in natural environment.

**Reason (R):** In natural conditions generally food and space start to act as limiting factor.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **4. Assertion (A):** Plant growth and development is intimately linked with the water status of plant cell.

**Reason (R):** Water provides the medium for enzymatic activities.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

**5. Assertion (A):** Environmental signals such as light and gravity also affect certain phases or stages of growth.

**Reason (R):** Gravity and light leads to differential auxin concentration which is responsible for differential growth.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **6. Assertion (A):** The act leading to maturation is known as differentiation.

**Reason (R):** Differentiation leads to structural and functional maturation of cells from meristematio cells.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **7. Assertion (A):** Secondary xylem and secondary phloem both are redifferentiated tissue.

**Reason (R):** Both of the tissue once again lose the capacity to divide, but mature to perform specific functions.

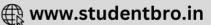
- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **8. Assertion (A):** Callus arise from parenchymatous cells under controlled laboratory conditions, is dedifferentiated mas of cells.

**Reason (R):** In callus arise from parenchymatous cells, cells regain ability of further division and lost specific shape and functions.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false







**9. Assertion (A):** Development is a broad and extensive aspect of the life of an organism.

**Reason (R):** Development includes all changes that an organism goes through during it's life cycle from birth of death.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **10. Assertion (A):** Growth regulators are intrinsic and intercellular factors which controls development of plant.

**Reason (R):** Growth regulators are produced by plant cell it self and work in cells other than those in which they synthesise.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **11. Assertion (A):** Auxins are widely used for plant propagation.

**Reason (R):** Auxins inhibit preharvesting fruit drop.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **12. Assertion (A):** By spray of gibberellin market period of fruits can be extended longer.

**Reason (R):** Somehow gibberellins delay senescence.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

**13. Assertion (A):** Gibberellin application increase sugarcane yield as much as 20 tonnes per acre.

**Reason (R):** Gibberellin leads bolting in sugarcane.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **14. Assertion (A):** Kinetin is synthetic cytokinine.

**Reason (R):** Kinetin was obtained from herring sperm DNA.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **15. Assertion (A):** Ethlene increases yield of deep water rice.

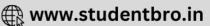
**Reason (R):** In deep water rice ethylene leads to elongation of either internode or petiole hence plant become able to overcome limiting effect of light.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **16. Assertion (A):** Abscisic acid helps in making of seed as perennation structure.

**Reason (R):** Abscisic acid promotes dormancy so that seed can tolerate desiccation and other factors.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false





**17. Assertion (A):** In day neutral plants there is no correlation between exposure to light duration and flowering response.

**Reason (R):** In Day neutral plant there is no specific requirement of light and dark hours.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **18. Assertion (A):** Flowering in plants depends only on a combination of light and dark exposure.

**Reason (R):** Flowering is not dependent on relative duration of light and dark hours.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **19. Assertion (A):** Vernalisation prevents precocious reproductive development till the plant matures.

**Reason (R):** Vernalisation leads to reduction in vegetative life of plant.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- 20. Assertion (A): Winter varieties off wheat & rye are planted in autumn not in spring. Reason (R): If winter varieties planted in spring normally they fail to flower or produce mature grain within a span of flowering season.
  - (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
  - (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
  - (3) (A) is true but (R) is false
  - (4) Both (A) and (R) are false

21. Assertion (A): Growth, at cellular level, is measured by a variety of parameters some of which are: increase in fresh weight, dry weight, length, area, volume and cell number.

**Reason (R):** Growth, at a cellular level, is principally a consequence of increase in the amount of protoplasm and increase in protoplasm is difficult to measure directly.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **22. Assertion (A):** A sigmoid curve is a characteristic of living organism growing in a natural environment.

**Reason (R): It** is typical for all cells, tissues and organs of a plant.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **23. Assertion (A):** Plant growth is intimately linked to the water status of the plant while development is not.

**Reason (R):** The plant cells grow in size by cell enlargement which in turn requires water.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **24. Assertion (A):** Apical dominance is most likely adaptive.

**Reason (R):** It is important for the plant to devote energy to growing upward so that it can get more light to undergo **photosynthesis**.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false







**25. Assertion (A):** Gibberellins are used to increase the length of grape stalks.

**Reason (R):** Gibberellins help overcome apical dominance.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **26. Assertion (A):** Spraying sugarcane crop with gibberellins increases the yield by as much as 20 tonnes per acre.

**Reason (R):** Spraying sugarcane crop with gibberellins increases the length of the stem.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **27. Assertion (A):** The most widely used compound as source of ethylene is ethephon.

**Reason (R):** Ethephon in an aqueous solution is readily absorbed and transported within the plant and releases ethylene slowly.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **28. Assertion (A):** Plants retain the capacity for unlimited growth throughout their life.

**Reason (R):** Meristems are present at certain locations in plant body.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false

**29. Assertion (A):** 2, 4-D is used to prepare weed-free lawns by gardeners.

**Reason (R):** 2, 4-D, widely used to kill monocotyledonous weeds, does not affect mature dicotyledonous plants.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **30. Assertion (A):** Spraying gibberellins on the tree can extend the market period for fruits.

**Reason (R):** Gibberellins delay senescence.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **31. Assertion (A):** GA<sub>3</sub> is used in brewing industry.

**Reason (R):** GA<sub>3</sub> speeds up the malting process.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **32. Assertion (A):** Spraying juvenile conifers with GAs delays seed production.

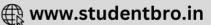
**Reason (R):** Spraying juvenile conifers with GAs delays the onset of maturity period.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false
- **33. Assertion (A):** ABA is also called the stress hormone.

**Reason (R):** ABA plays an important role in seed development, maturation and dormancy.

- (1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
- (2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
- (3) (A) is true but (R) is false
- (4) Both (A) and (R) are false





**Directions:** In the following questions, a statement of assertion is followed by a statement of reason.

Mark the correct choice as:

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If both Assertion and Reason are false.
- 34. Assertion: Both at the root apex and the shoot apex, the constantly dividing cells show the meristematic phase of growth.

  Reason: The cells of this region are rich in protoplasm and lacks nuclei.
- 35. **Assertion:** Sigmoid growth curve consists of four parts.

**Reason:** Lag phase is also known as grand phase of growth.

- **36. Assertion:** Due to environment, the difference in shapes of leaves produced in air and those produced in water in buttercup represent the heterophyllous development. **Reason:** The phenomenon of heterophylly is an example of plasticity.
- 37. **Assertion :** Auxins help to prevent fruit and leaf drop at early stages.

**Reason:** Auxins promote the abscission of older mature leaves and fruits.

38. **Assertion:** Gibberellins are used in fruits like apple to elongate and improve its shape.

**Reason:** To speed up the malting process in brewing industry GA3 is used.

39. **Assertion :** Ethylene causes climacteric ripening of fruits.

**Reason :** Climacteric fruits show a rise in respiration at the time of ripening.

40. **Assertion:** Abscisic acid (ABA) is also known as stress hormone.

**Reason:** ABA increases the tolerance of plants to various kinds of stresses.

41. **Assertion :** The pigment which causes photoperiodic stimulus is called phytochrome.

**Reason:** Chemically phytochrome is a starch.

42. **Assertion :** Vernalization is acceleration of subsequent flowering by low temperature treatment.

**Reason:** Site of vernalization is apical meristem.

43. **Assertion:** The sum of growth and differentiation is development.

**Reason:** Development in plants is under the control of extrinstic factors only.

**44. Assertion:** Secondary roots and shoots are plagiogeotropic.

**Reason:** Plagiogeotropic roots are those which develop at an angle of 45° from the vertical axis.

**45. Assertion:** Stratification of seeds may promote their germination.

**Reason:** Stratification is promoted by gibberellin and cytokinins.

**46. Assertion:** "Touch" responses in Mimosa is an example of such movement

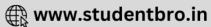
**Reason:** In the direction of stimulus, nastic movements occur.

**47. Assertion:** Floral initiation is done by florigen.

**Reason:** Floring is translocated from flowers to leaves.







	ANSWER KEY																			
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	1	2	1	1	1	1	1	1	1	1	2	1	3	2	1	1	1	4	1	1
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33							
Ans.	1	2	4	1	3	1	1	1	3	1	1	4	2							

34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.		
С	C	В	В	В	В	A	С	В	C	A	В	С	С		

