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_3 is used in brewing industry.
Reason (R): GA_3 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.			
C	C	B	B	B	B	A	C	B	C	A	B	C	c			