

Plants Growth and Development

1. Spraying of which of the following phytohormone on juvenile conifers helps hastening the maturity period, that leads early seed production? **(2023)**
 - (a) Absciscic Acid
 - (b) Indole-3-butyric Acid
 - (c) Gibberellic Acid
 - (d) Zeatin
2. Which hormone promotes internode/petiole elongation in deep water rice? **(2023)**
 - (a) 2, 4-D
 - (b) GA3
 - (c) Kinetin
 - (d) Ethylene
3. Which of the following statements is not correct? **(2023)**
 - (a) Phase of cell elongation of plant cells is characterized by increased vacuolation
 - (b) Cells in the meristematic phase of growth exhibit abundant plasmodesmatal connections
 - (c) Plant growth is generally determinate
 - (d) Plant growth is measurable
4. The ability of plants to follow different pathways in response to environment leading to formation of different kinds of structures is called **(2022)**
 - (a) Differentiation
 - (b) Redifferentiation
 - (c) Development
 - (d) Plasticity
5. Which of the following growth regulators is an adenine derivative? **(2022)**
 - (a) Absciscic acid
 - (b) Auxin
 - (c) Cytokinin
 - (d) Ethylene
6. Which one of the following plants does not show plasticity? **(2022)**
 - (a) Cotton
 - (b) Coriander
 - (c) Buttercup
 - (d) Maize
7. The gaseous plant growth regulator is used in plants to: **(2022)**
 - (a) speed up the malting process
 - (b) promote root growth and roothair formation to increase the absorption surface
 - (c) help overcome apical dominance
 - (d) kill dicotyledonous weeds in the fields
8. Production of Cucumber has increased manifold in recent years. Application of which of the following phytohormones has resulted in this increased yield as the hormone is known to produce female flowers in the plants: **(2022)**
 - (a) ABA
 - (b) Gibberellin
 - (c) Ethylene
 - (d) Cytokinin
9. The site of perception of light in plants during photoperiodism is: **(2021)**
 - (a) Stem
 - (b) Axillary bud
 - (c) Leaf
 - (d) Shoot apex
10. The plant hormone used to destroy weeds in a field is: **(2021)**
 - (a) NAA
 - (b) 2, 4-D
 - (c) IBA
 - (d) IAA
11. Plants follow different pathways in response to environment or phase of life to form different kinds of structures. This ability is called: **(2021)**
 - (a) Flexibility
 - (b) Plasticity
 - (c) Maturity
 - (d) Elasticity
12. The process of growth is maximum during: **(2020)**
 - (a) Lag phase
 - (b) Senescence
 - (c) Dormancy
 - (d) Log phase
13. Which of the following is not an inhibitory substance governing seed dormancy? **(2020)**
 - (a) Absciscic acid
 - (b) Phenolic acid
 - (c) Para-ascorbic acid
 - (d) Gibberellic acid

14. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop. **(2020)**

(a) Gibberellin
(b) Ethylene
(c) Absciscic acid
(d) Cytokinin

15. Match the following concerning the activity/function and the phytohormone involved. **(2020 Covid Re-NEET)**

1.	Fruit ripener	(i)	Absciscic acid
2.	Herbicide	(ii)	GA ₃
3.	Bolting agent	(iii)	2, 4-D
4.	Stress hormone	(iv)	Ethephon

Select the correct option from following:

(1) (2) (3) (4)

(a) (iii) (iv) (ii) (i)
(b) (iv) (iii) (ii) (i)
(c) (iv) (ii) (i) (iii)
(d) (ii) (iii) (iv) (i)

16. Who coined the term 'Kinetin'?

(2020 Covid Re-NEET)

(a) Darwin
(b) Went
(c) Kurosawa
(d) Skoog and Miller

17. Inhibitory substances in dormant seeds cannot be removed by subjecting seeds to:

(2020 Covid Re-NEET)

(a) Nitrate
(b) Ascorbic acid
(c) Chilling conditions
(d) Gibberellic acid

18. It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield?

(2019)

(a) Auxin and Ethylene
(b) Gibberellin and Cytokinin
(c) Gibberellin and Absciscic acid
(d) Cytokinin and Absciscic acid

19. What is the site of perception of photoperiod necessary for induction of flowering in plants? **(2019)**

(a) Lateral buds
(b) Pulvinus

(c) Shoot apex

(d) Leaves

20. Fruit and leaf drop at early stages can be prevented by the application of: **(2017)**

(a) Cytokinins
(b) Ethylene
(c) Auxins
(d) Gibberellic acid

21. Match Column - I with Column - II and select the correct option using codes give below. **(2017)**

Column - I		Column - II	
A.	Cytokinin	(i)	Stimulates closure of stomata
B.	Ethylene	(ii)	Increases stem length
C.	Gibberellin	(iii)	Promotes lateral shoot growth
D.	Absciscic acid	(iv)	Found in large amount in tissues undergoing senescence

Codes:

(a) A-(iii) B-(iv) C-(ii) D-(i)
(b) A-(iii) B-(ii) C-(iv) D-(i)
(c) A-(iv) B-(i) C-(iii) D-(ii)
(d) A-(ii) B-(iv) C-(i) D-(iii)

22. Growth hormone Auxin was isolated by F.W. Went from tips of seeding coleoptile of:

(2017)

(a) Rice
(b) Maize
(c) Wheat
(d) Oat

23. You are given a tissue with its potential for differentiation in an artificial culture. Which of the following pairs of hormones would you add to the medium to secure shoots as well as roots? **(2016-II)**

(a) Auxin and Absciscic acid
(b) Gibberellin and Absciscic acid
(c) IAA and Gibberellin
(d) Auxin and Cytokinin

24. The Avena curvature is used for bioassay of: **(2016-I)**

(a) ABA
(b) GA
(c) IAA
(d) Ethylene

25. Typical growth curve in plants is: **(2015)**

- (a) Stair-steps shaped
- (b) Parabolic
- (c) Sigmoid
- (d) Linear

26. What causes a green plant exposed to the light on only one side, to bend toward the source of light as it grows? **(2015)**

- (a) Light stimulates plant cells on the lighted side to grow faster.
- (b) Auxin accumulates on the shaded side, stimulating greater cell elongation there.
- (c) Green plants need light to perform photosynthesis.
- (d) Green plants seek light because they are phototropic.

27. Auxin can be bioassay by: **(2015 Re)**

- (a) Hydroponics
- (b) Potometer
- (c) Lettuce hypocotyl elongation
- (d) Avena coleoptile curvature

28. Dr. F. Went noted that if coleoptile tips were removed and placed on agar for one hour, the agar would produce a bending when placed on one side of freshly cut coleoptile stumps. Of what significance is this experiment? **(2014)**

- (a) It demonstrated polar movement of auxins
- (b) It made possible the isolation and exact identification of auxin
- (c) It is the basis for quantitative determination of small amounts of growth-promoting substances
- (d) It supports the hypothesis that IAA is Auxin

29. A few normal seedlings of tomato were kept in a dark room.

After a few days they were found to have become white-colored like albinos. Which of the following terms will you use to describe them? **(2014)**

- (a) Defoliated
- (b) Mutated
- (c) Embolised
- (d) Etiolated

30. Which one of the following growth regulators is known as 'stress hormone'? **(2014)**

- (a) Indole acetic acid
- (b) Abscissic acid
- (c) Ethylene
- (d) GA₃

31. During seed germination its stored food is mobilised by: **(2013)**

- (a) Gibberellin
- (b) Ethylene
- (c) Cytokinin
- (d) ABA

Answer Key

S1. Ans. (c)

S2. Ans. (d)

S3. Ans. (c)

S4. Ans. (d)

S5. Ans. (c)

S6. Ans. (d)

S7. Ans. (b)

S8. Ans. (c)

S9. Ans. (c)

S10. Ans. (b)

S11. Ans. (b)

S12. Ans. (d)

S13. Ans. (d)

S14. Ans. (a)

S15. Ans. (b)

S16. Ans. (d)

S17. Ans. (b)

S18. Ans. (a)

S19. Ans. (d)

S20. Ans. (c)

S21. Ans. (a)

S22. Ans. (d)

S23. Ans. (d)

S24. Ans. (c)

S25. Ans. (c)

S26. Ans. (b)

S27. Ans. (d)

S28. Ans. (b)

S29. Ans. (d)

S30. Ans. (b)

S31. Ans. (a)

Solutions

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| <p>S1. Ans.(c)
 Spraying juvenile conifers with gibberellins (GAS) hastens the maturity period, thus leading to early seed production.</p> <p>S2. Ans.(d)
 Ethylene promotes rapid internode/petiole elongation in deep water rice plants.</p> <p>S3. Ans.(c)
 This is a key characteristic of plants. So, the statement that plant growth is generally determinate is incorrect.</p> <p>S4. 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.</p> <p>S5. Ans.(c)
 - Cytokinins are derived from adenine.
 - Auxins are derivatives of indole compounds.
 - Absciscic acid is derived from carotenoids.
 - Ethylene is derived from methionine.</p> <p>S6. 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.</p> <p>S7. 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</p> | <p>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.</p> <p>S8. 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.</p> <p>S9. 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.</p> <p>S10. Ans.(b)
 The synthetic auxin 2, 4-D is used to destroy weeds in a monocot field.</p> <p>S11. 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.</p> <p>S12. 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.</p> <p>S13. 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.</p> |
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S14.	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.	In tomatoes, NAA prevents fruit drop; in citrus, 2, 4-D prevents fruit drop.
S15.	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.	S21. Ans.(a) A-(iii) B-(iv) C-(ii) D-(i)
S16.	Ans.(d) Skoog and Miller later discovered and crystallised the cytokinesis-promoting active component, which they named kinetin.	S22. 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.
S17.	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.	S23. Ans.(d) Auxin aids in the production of roots, while cytokinin aids in the development of shoots.
S18.	Ans.(a) Auxin, a plant hormone, causes pineapple to blossom. In pineapple, ethylene is employed to synchronise blooming and fruit set.	S24. 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.
S19.	Ans.(d) Photoperiodic stimulation is sensed by plant leaves during flowering.	S25. 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.
S20.	Ans.(c) Auxins help to keep leaves and fruits from falling off too soon.	S26. 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.
		S27. 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.
		S28. Ans.(b) The isolation and precise identification of auxin was made feasible by this experiment.

S29. Ans.(d)

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

S30. Ans.(b)

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

S31. Ans.(a)

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