BIOLOGY

BOOKS - SANTRA BIOLOGY (BENGALI ENGLISH)

PLANT GROWTH AND DEVELOPMENT

Exercise Objective Type Questions

1. Which one of the following hormones are associated with seed maturation ?

A. IAA

B. ABA

C. Ethylene

D. Kinetin

Answer: B

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2. In dioecious species genetically female plants can be induced to produce male flowers by the application of

A. IAA

B. Ethylene

C. GA_3

D. ABA

Answer: C

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3. Seedlings grown in darkness

A. are taller than those grown in light

B. are of same size

C. are smaller than those grown in light

D. none of them

Answer: D

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4. Auxanometer is used to measure

A. rate of photosynthesis

B. rate of plant growth height of plant

C. height of plant

D. wind velocity

Answer: C

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5. Kinetin was first isolated from

A. Immature corn seed

B. DNA of coconut milk

C. DNA of herring sperm

D. DNA of monkey's liver

Answer: C

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6. The induction of celll elongation by IAA is explained on the basis of

A. The acid growth hypothesis

B. Auxin-ethylene balance hypothesis

C. Sodium potassium pump hypothesis

D. Osmotic pressure hypothesis

Answer: A

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7. Which one of the following pair is correctly matched ?

A. Auxin-cell division

B. Gibberelline -internodal elongation

C. Cytokinin -fruit ripening

D. Ethylene-apical dominance

Answer: B

8. Pr form of phytochrome absorbs light

A. 730nm

B. 630nm

C. 700 nm

D. 660 nm

Answer: D

9. Senescene of detached leaves can be delayed by the use of

A. Auxin

B. Gibberelline

C. Cytokinin

D. Ethylene

Answer: C

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10. Anthocyanin development and plastid differentiation are the photomorphogenetic effect of

A. Cytochrome

B. Phytochrome

C. Florigen

D. Ethylene

Answer: B

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11. Which one of the following hormone causes dwarf beans to grow to the same height as tall varieties

A. Auxin

B. Gibberllin

C. Cytokinin

D. Ethylene

Answer: B

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12. Which of the following gibberellin is best studied ?

A. GA_1

B. GA_2

C. GA_3

D. GA_9

Answer: C

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13. Plant growth is maximum during

A. afternoon

B. morning

C. daytime

D. night

Answer: D

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14. Indole-3-acetic acid is chemically similar to the amino acid

A. Proline

B. Methionine

C. Tryptophan

D. Phenylalanine

Answer: C

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15. The synthetic 'rooting powder' commonly used by farmers to induce the formatoin of adventitious roots in cutting contain

A. A mixture of IBA and NAA

B. 2,4D

C. A mixture of IAA and IAN

D. ABA

Answer: A

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16. Maximum phytochrome occurs in

A. bacteria

B. seedling growing in dark

C. fungi

D. seedlings grown in light

Answer: B

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17. The maximum growth rate occurs in

A. exponential phase

B. lag phase

C. stationary phase

D. senescent phase

Answer: A

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18. The hypothetical 'florigen' could be released prematurely in a long day plant by exposing it to

A. far-red light during the day

B. far red light during the night

C. red light during the day

D. red light during the night

Answer: D

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19. Mobilisation of stored food in germinating seed is triggered by

A. Auxin

B. Cytokinin

C. Gibberellin

D. Ethylene

Answer: C

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20. Auxin dominance is due to

A. Gibberellic acid in the lateral buds

B. Cytokinin in the leaf tip

C. Auxin in the shoot tip

D. Abscisic acid in the lateral bud

Answer: C

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21. Abscisic acid treatment result in

A. Leaf expansion

B. Steam elongation

C. Stomatal closure

D. Root elongation

Answer: C

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22. Pigment involved in photoperception in flowering is

A. Cytochrome

B. Phytochrome

C. Carotene

D. Lycopene

Answer: B

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23. Internal factor of plant growth is

A. temperature

B. cholorphyll

C. wind

D. hormone

Answer: D

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24. Dwarness of plant can be controlled by treating it with

A. Gibberellic acid

B. Cytokinin

C. Antigibberellin

D. Auxin

Answer: A

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25. Cytokinin are known to

A. Inhibit cytoplasmic movement

B. Help in retention of chlorophyll

C. Influence water movement

D. Promote abscission layer formation

Answer: B

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26. To prevent over ripening of banana these

A. should be kept in refrigerator

B. should be kept at room temperature

C. should be treated with Ascorbic acid

D. none of these

Answer: A

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27. In short day plant flowering iS induced by

A. long night

B. photoperiod less than 12 hrs

C. photoperiod shorter than initial value and uninterrupted long night

D. short photoperiod and interrupted long night

Answer: C

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28. clinostat is used in studies on

A. photosynthesis

B. respiration

C. osmosis

D. geotropiosm

Answer: D

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29. Apical dominanace in higher plants is due to

A. Hormone

B. Enzymes

C. Carbohydrate

D. Photoperiodism

Answer: A

30. Gibberelic acid has been successfully employeed to induce flowering

A. In long day plant under short day condition

B. In short day plant under long day condition

C. In day neutral plants

D. None of the above

Answer: A

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31. Richmond Lang effect is shown by

A. Auxin

B. Gibberellins

C. Kinetin

D. Sugar

Answer: C

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32. The pigment responsible for photo-morphogenetic response

A. phytochlorophyll

B. xanhophyll

C. phytochrome

D. carotene

Answer: C

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33. Temperature require for normal plant growth is

A. $0 - 50^{\circ} C$

B. $25 - 30^{\circ} C$

C. $10 - 15^{\circ} C$

D. $4 - 10^{\circ} C$

Answer: B

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34. All cytokinins are

A. Acidic

B. Aminopurines

C. Phenol

D. Glucosides

Answer: B

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35. The stored food in germinating seed is acted upon by

A. diastase

B. lipase

C. maltase

D. trysin

Answer: B

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36. Leaf fall starts when the amount of

A. Auxin increases

B. Auxin decreases

C. ABA decreases

D. Gibberellic acid decreases

Answer: B

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37. Which of the following is a growth retardant ?

A. Morphactin

B. Aclenine

C. Zeatin

D. Ascorbic acid

Answer: A

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38. Which of the following is not a hormone ?

A. GA_3

B. Ethylene

C. Phytochrome

D. Auxin

Answer: C

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39. Most of the plant are seasonal due to

A. Photoperiodism

B. Phototropism

C. Photosynthesis

D. Photolysis

Answer: A

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40. Certain chemical substances having profound effect on growth, are called

A. Compost

B. Catalytic agent

C. Enzymes

D. Phytohormones

Answer: A

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41. The period of suspended growth due to exogenous conditioin is called

A. dormancy

B. quiscence

C. perennation

D. hibernation

Answer: B

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42. Common biosynthetic inhibitor of GA is

A. Citric acid

B. CCC

C. Lactic acid

D. Jasmonic acid

Answer: B

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43. Photoperiodism is associated with

A. florigen

B. auxin

C. vernalin

D. gibberellin

Answer: A

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44. The wavelength of light absorbed by Pr form of phytochrome is

A. 680 nm

B. 640nm

C. 620nm

D. 720 nm

Answer: A

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45. Which one of the following pairs, is not correctly matched ?

A. GA-Leaf fall

B. Cytokinin -Cell division

C. IAA-Cell wall elongation

D. ABA -Stomatal closure

Answer: A

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46. Foolish Seedling' disease of rice led to the discovery of

A. GA

B. IAA

C. 2,4-D

D. ABA

Answer: A

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47. Maximum growth occurs in

A. Exponential phase

B. Lag phase

C. Senscent phase

D. Stationary phase

Answer: A

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48. Cell elongation in internodal region is mediated through

A. Gibberellins

B. IAA

C. Cytokinins

D. Ethylene

Answer: A

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49. The sensecence is an active development cellular process in indicated in

A. Floral parts

B. Leaf abscission

C. Annual planta

D. Vessel & tracheid differentiation

Answer: B

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50. Which one is derivative of carotenoid ?

A. ABA

B. IAA

C. IBA

D. GA

Answer: A

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51. Which one is not a short day plant ?

A. Glycine max

B. Spinach

C. Xanthium

D. Chrysanthemum

Answer: B

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52. Importance of day length in flowering was first shown in

A. Cotton

B. Tobacco

C. Petunia

D. Lemma

Answer: B

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53. The rosette habit of cabbage can be changed by the application of

A. GA

B. IAA

C. IBA

D. ABA

Answer: A

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54. Bolting may be induced by

A. ABA

B. gibberelline

C. Auxin in the shoot tip

D. cytokinin

Answer: B

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55. Removal of apical bud makes

A. plant bushy

B. available more auxins to lateral buds

C. formation of lateral branches

D. all of the above

Answer: D

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56. The study of phototropic response lead to the discovery of

A. auxin

B. Ethylene

C. gibberellin

D. cytokinin

Answer: A

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57. Hormone antagonist to gibberellins is

A. ABA

B. Ethylene

C. IAA

D. Zeatin

Answer: A

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58. Vernalization stimulates flowering in

A. Turmeric

B. Carrote

C. Ginger

D. Zarnikand

Answer: B

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59. Growth hormone that speeds up malting in brewery industry is

A. Ethylene

B. Kinetin

C. Gibberellin acid

D. Auxin

Answer: C

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60. Natural hormone isolated from coconut milk and corn kernels is

A. GA_3

B. Zeatin

C. Florigen

D. Auxins

Answer: B

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61. Hormone antagonistic to ABA is

A. Auxin

B. Cytokinin

C. Gibberellin

D. Ethylene

Answer: C

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62. Age of tree can be estimated by

A. its height and girth

B. biomass

C. diameter of its heartwood

D. number of annual rings

Answer: D

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63. During seed germination its stored food is mobilized by

A. Cytokinin

B. ABA

C. Gibberellin

D. Ethylene

Answer: A

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

A. It made possible the isolation and exact identification of auxin

B. It is the basis for quantitative determination of small amounts of growth-promoting substances

C. It supports the hypothesis that IAA is auxin

D. It demonstrated polar movement of auxin

Answer: B

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65. Which one of the following is a growth regulartor produced by plants ?

A. Naphthalene acetic acid

B. Zeatin

C. 2,4-dichlorophenoxy acetic acid

D. Benzyl amonopurine

Answer: B

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66. If a plant produces flowers when exposed only to alternating periods of 5 hors light and 3 hours dark in a 24-hour cycle, then the plant should be

A. Short day plant

B. Long day plant

C. Short-long day plant

D. Day neutral plant

Answer: B

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67. Which one of the following is a dicot weedicide ?

A. 2,4-D

B. NAA

C. IBA

D. IAA

Answer: A

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68. Senescense in plants lead into . . .. of cells

A. Increase in size

B. Increase in number

C. Death

D. differentiation

Answer: C

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69. Vernalization promotes flowering by

A. Low temperature

B. High temperature

C. Prolonged photoperiod

D. Short photoperiod

Answer: A

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70. Seed dormancy can be broken by the following combination of chemicals

A. GA_3, IAA and ABA

B. KNO_3, GA_3 and Ethylene chlorohydrin

C. NAA,2,4,5-T and IAA

D. ABA,BAP and GA_3

Answer: B

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71. You are given a tissue with its potential for differentiation in an artifical culture. Which of the following pairs of hormones would you add to the medium to secure shotts as well as roots ?

A. Gibberelline and abscisic acid

B. IAA and Gibberellin

C. Auxin and cytokinin

D. Auxin and abscisic acid

Answer: C

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72. Fruit and leaf drop at early stages can be prevented by the application of

A. Ethylene

B. Auxins

C. Gibberellic acid

D. Cytokinins

Answer: B

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Choose More Than One Options

1. Vivipary germination found in

A. Pea

B. Maize

C. Cereops

D. Rhizophora

Answer: C::D

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2. Hypogeal germination found in

A. Bean

B. Pea

C. Castor

D. Maize

Answer: b,d

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3. Which are growth promoting substances ?

A. Ethylene

B. auxin

C. cytokinin

D. ABA

Answer: b,c

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4. Prevention of abscission by

A. IBA

B. IAA

C. 2,4-D

D. NAA

Answer: C::D

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5. The long short day plants are

A. Trifolium

B. Soyabean

C. Cestrum

D. Bryophyllum

Answer: C::D

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6. The growth inhibiting hormones are

A. ABA

B. Auxin

C. Gibberellin

D. Ethylene

Answer: A::D

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7. Chemically originated plant growth promoters are

A. Kinetin

B. Cytokinin

C. IAA

D. none of them

Answer: a,c

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8. The synthetic auxins are

A. IAA

B. IBA

C. NAA

D. 2,4-D

Answer: b,c,d

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9. Which hormone prevents, abscission ?

A. NAA

B. 2,4-D

C. 2,4,5-T

D. ABA

Answer: A::B

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10. Parthenocarpy found in case of

A. Apple

B. Tomato

C. Grape

D. Pear

Answer: A::D

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Fill In The Blanks

1. Cell division and _____ are important aspect of growth and development.

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2. Term _____ is applied to Indole acetic acid (IAA) .

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3. _____ of leaves and fruits lead to leaf fall and fruit fall.

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4. IBA stands for _____.

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5. In conjunction with auxin _____ stimulates cell division even in non meristematic tissue.

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6. Gibberellin stimulate stem elongation and leaf _____.

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7. Ethylene is associated with the process of _____ of plant organ.

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8. Dormant seeds germinate when _____ is overcome by gibberellins.

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9. ABA act also as _____ hormone.

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10. Gibberellin induce stem elongation in _____ plants.

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True Of False Statement Questions

1. ABA is used in inducing flowering in short day plant.

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2. Growth is not permanent increase in size.

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3. Growth is measured by auxonometer.

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4. Growth inhibiting hormone is auxin.

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5. Chemically plant growth regulators are indole compounds.

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6. Oxygen is not necessary for seed germination.

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7. Removal of the tipe of coleoptile deprives it of a growth promoting substance

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8. Plant growth is stimulated by the presence of auxins, ethylene and abscisic acid.

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Very Short Answer Type Questions

1. Name two long day plant.

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2. Give full name IAA and 2,4-D

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3. Give one example of positive photoblastic seed.

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4. Which hormone promotes leaf fall ?

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5. Where the auxins are synthesized?

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6. In a wheat field some broad leaved weed are seen by the farmers, which plant hormone will

you suggest to get rid of them ?

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7. What does stationary phase of sigmoid growth curve indicates.

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8. Which is the only one gaseous natural plant growth regulator.

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9. What induces parthenocarpy in grapes ?

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10. What can induce bolting in cabbage plant ?

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11. What does an over ripe apple release which ripens all other apples in the basket ?

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12. What is vernalization ?

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13. What are quiscent seeds ?

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14. What is gerontology ?

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15. What is grand period of growth ?

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16. What is structural differentiation ?

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17. State the function of growth hormones in plant.

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18. What is ageing?

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19. What is senescence ?

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20. Where double sigmoid curve is found ?

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21. What is macrobiotic ?

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22. State about the epigeal.

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23. Where vivipary germination is found ?

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24. What does a higher C/N ratio do in a plant ?

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25. Who studied the growth systematically for the first time ?

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26. Name the precurser of IAA.

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27. Which increases in the absence of light ?

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28. Which of the following is used in root formation on stem cuttings ?

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Short Answer Type Questions

1. What is growth ?

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2. What is differentiation ?

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3. What is morphogenesis ?

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4. What is development ?

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5. What is grand period of growth ?

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6. What is metamorphosis ?

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7. What is diapause ?

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8. What are neoteny and pedogensis ?

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9. What is regeneration ?

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10. What is abscission ? Name a hormone that helps in abscission.

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11. What is pheromone ?

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12. What is photoperiodism ?

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13. What is growth ring or annual ring ?

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14. What is sigmoid growth curve ?

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15. What do you mean by differentiation ?

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16. Define hypogeal germination .

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17. What is seed germination ?

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18. Give two characteristics of phytohormones.

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19. What do you mean by seed dormancy ?

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20. Define vernalization.

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21. What are the different phases of growth ?

Give the characteristics of each.

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22. Which hormone prevent senescence ? Name its different functions and uses.

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23. Write the brief account of abscisic acid.

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24. Name the plant hormone which was discovered from the fungus. Give its any three

functions.

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25. What is development ? What are direct and indirect developments ?

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26. What are main differences between vegetative growth and reproductive growth ?

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27. What are the differences between isometric and allometric growth?

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28. What are the phases of growth ?

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29. Name two apparatus for measurement of plant growth.

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30. Name two hormones that help in plant growth.

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Long Answer Types Questions

1. What is growth ? What are the phases of growth ? Mention the factors of growths. Distinguish between growth of plant and animal.

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2. Explain the role of factors in growth of plants and animals.

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3. When a seed is shown in the ground, what are the changes taking place in it leading to the germination.

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4. Write a brief note on vernalization.

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5. Write a short note on photoperiodism. Explain its significance in relation to flowering.

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6. Distinguish between - (i) Photoperiodism and phototropism (ii) Long day and short day plant

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7. Discuss the practical application of growth regulators.

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8. Write the physiological effect of gibberellins.

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9. Discuss the term- (i) Vernalization (ii) Senescence (iii) Phytochrome (iv) Hypogeal germination.

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10. Give a brief account of pattern of plant growth and development as influence by temperature.

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Ncert Questions

1. Define growth, differentiation , development, dedifferentiation, redifferentiation, determinate growth, meristem and growth rate.

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2. Why is not any one parameter good enough to demonstrate growth throughout the life of a flowering plant?

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3. Describe briefly :

(a) Arithmetic growth.

(b) Geometric growth

(c) Sigmoid growth curve

(d) Absolute and relative growth rates

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4. List five main groups of natural plant growth regulators. Write a note on discovery, physiological functions and agricultural / horticultural applications of any one of them.

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5. What do you understand by photoperiodism and vernalisation ? Describe their significance.

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6. Why is abscisic acid also known as strees hormone ?

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7. Both growth and differentiation in higher plants are open'. Comment.

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8. Both a short day plant and a long day plant can produce can flower simultaneously in a given place'. Explain.

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9. Which one of the plant growth regulators would you use if you are asked to :

(a) induce rooting in a twig.

(b) quickly ripen a fruit

(c) delay leaf senescence

(d) induce growth in axillary buds

(e) 'bolt' a rosette plant

(f) induce immediate stomatal closure in leaves.

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10. Would defoliated plant respond to photoperiodic cycle ? Why ?

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11. What would be expectd to happen if :

(a) GA_3 is applied to rice seedling

(b) dividing cells stop differentiating

(c) a rotten fruit gets mixed with unripe fruits

(d) you forget to add cytokinin to the culture medium.

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