



### 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

 $\mathsf{C}.GA_3$ 

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



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

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#### 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





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

A. Cytochrome

- B. Phytochrome
- C. Florigen
- D. Ethylene

#### Answer: B



**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





## **12.** Which of the following gibberellin is best studied ?

- A.  $GA_1$
- $\mathsf{B.}\,GA_2$
- $\mathsf{C}.GA_3$

#### D. $GA_9$





#### 13. Plant growth is maximum during

A. afternoon

B. morning

C. daytime

D. night

Answer: D



### 14. Indole-3-acetic acid is chemically similar to

the amino acid

A. Proline

B. Methionine

C. Tryptophan

D. Phenylalanine

#### Answer: C





**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

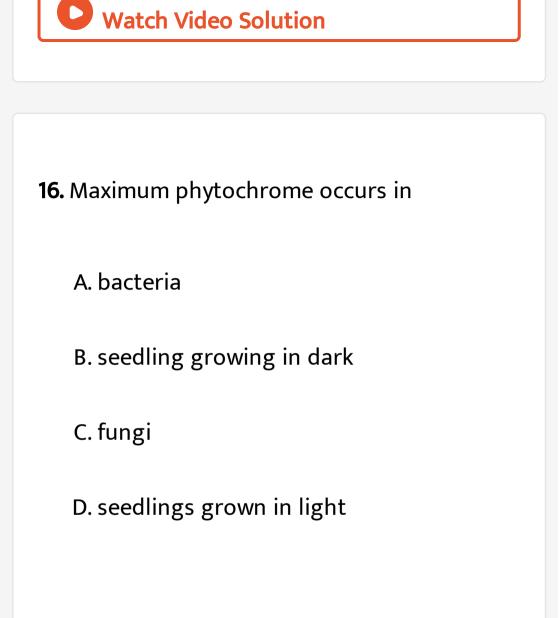
B. 2,4D

C. A mixture of IAA and IAN

D. ABA

#### Answer: A





#### Answer: B

17. The maximum growth rate occurs in

A. exponential phase

B. lag phase

C. stationary phase

D. senescent phase

Answer: A

**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

19. Mobilisation of stored food in germinating

seed is triggered by

A. Auxin

B. Cytokinin

C. Gibberellin

D. Ethylene

Answer: C

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



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



#### 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

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**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 photomorphogenetic 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**



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

A. diastase

B. lipase

C. maltase

D. trysin

Answer: B



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





#### 39. Most of the plant are seasonal due to

A. Photoperiodism

- B. Phototropism
- C. Photosynthesis
- D. Photolysis





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

A. Compost

B. Catalytic agent

C. Enzymes

D. Phytohormones

#### Answer: A





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

A. dormancy

B. quiscence

C. perennation

D. hibernation

Answer: B

42. Common biosynthetic inhibitor of GA is

A. Citric acid

B. CCC

C. Lactic acid

D. Jasmonic acid

Answer: B

43. Photoperiodism is associated with

A. florigen

B. auxin

C. vernalin

D. gibberellin

Answer: A

44. The wavelength of light absorbed by Pr

form of phytochrome is

A. 680 nm

B. 640nm

C. 620nm

D. 720 nm

Answer: A

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

46. Foolish Seedling' disease of rice led to the

#### discovery of

A. GA

B. IAA

C. 2,4-D

D. ABA

**Answer: A** 

#### 47. Maximum growth occurs in

A. Exponential phase

B. Lag phase

C. Senscent phase

D. Stationary phase

Answer: A

**48.** Cell elongation in internodal region is mediated through

A. Gibberellins

B. IAA

C. Cytokinins

D. Ethylene

Answer: A

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

50. Which one is derivative of carotenoid ?

A. ABA

B. IAA

C. IBA

D. GA

Answer: A



51. Which one is not a short day plant?

A. Glycine max

B. Spinach

C. Xanthium

D. Chrysanthemum

Answer: B

52. Importance of day length in flowering was

first shown in

A. Cotton

B. Tobacco

C. Petunia

D. Lemma

**Answer: B** 

53. The rosette habit of cabbage can be

changed by the application of

A. GA

B. IAA

C. IBA

D. ABA

**Answer: A** 



54. Bolting may be induced by

A. ABA

- B. gibberelline
- C. Auxin in the shoot tip
- D. cytokinin

Answer: B



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

56. The study of phototropic response lead to

the discovery of

A. auxin

B. Ethylene

C. gibberellin

D. cytokinin

Answer: A

#### 57. Hormone antagonist to gibberellins is

A. ABA

B. Ethylene

C. IAA

D. Zeatin

Answer: A



58. Vernalization stimulates flowering in

### A. Turmeric

- B. Carrote
- C. Ginger
- D. Zarnikand

#### Answer: B



#### 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



**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

Answer: B

auxin



**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





**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





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

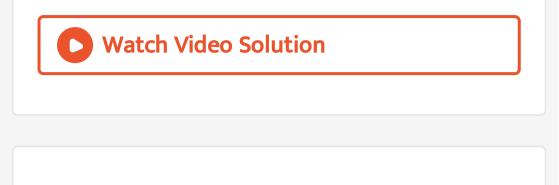
A. 2,4-D

B. NAA

C. IBA

D. IAA

#### Answer: A



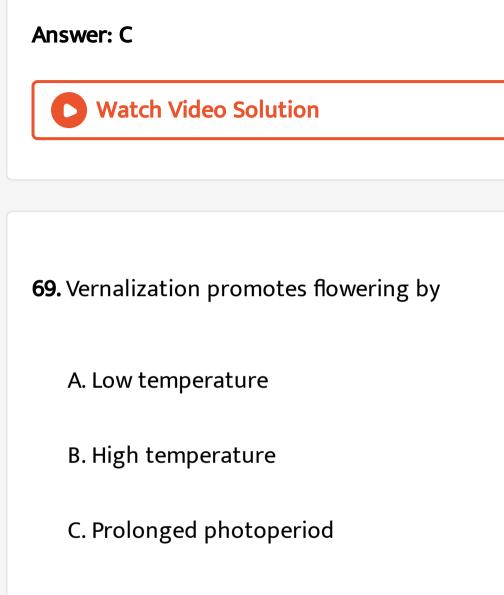
# **68.** Senescense in plants lead into

A. Increase in size

B. Increase in number

C. Death

D. differentiation



D. Short photoperiod

Answer: A



**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





**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





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

A. Ethylene

**B.** Auxins

C. Gibberellic acid

D. Cytokinins





### **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





### 3. Which are growth promoting substances ?

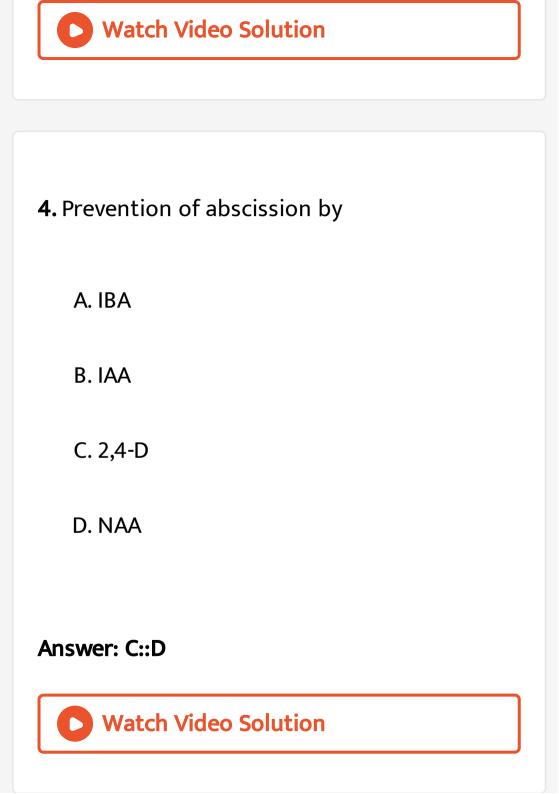
A. Ethylene

B. auxin

C. cytokinin

D. ABA

Answer: b,c



5. The long short day plants are

A. Trifolium

B. Soyabean

C. Cestrum

D. Bryophyllum

Answer: C::D

6. The growth inhibiting hormones are

A. ABA

B. Auxin

C. Gibberellin

D. Ethylene

Answer: A::D

7. Chemically originated plant growth

promoters are

A. Kinetin

B. Cytokinin

C. IAA

D. none of them

Answer: a,c

### 8. The synthetic auxins are

A. IAA

B. IBA

C. NAA

D. 2,4-D

Answer: b,c,d



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

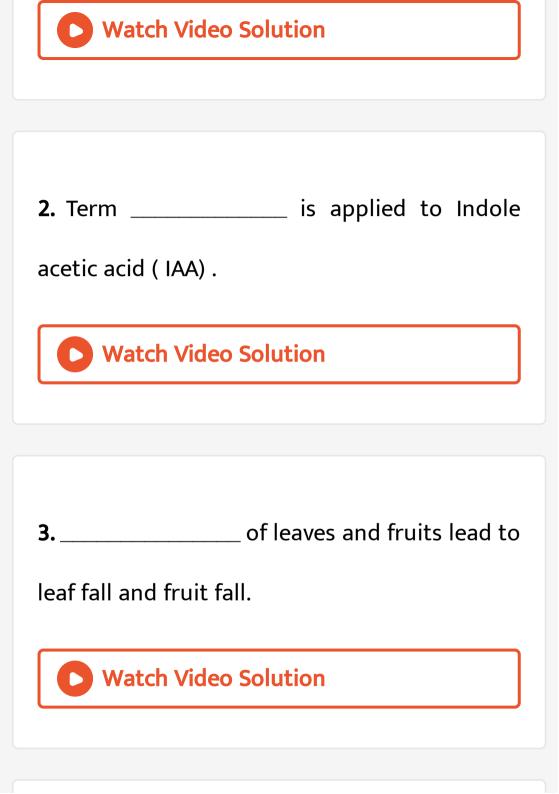
Answer: A::D

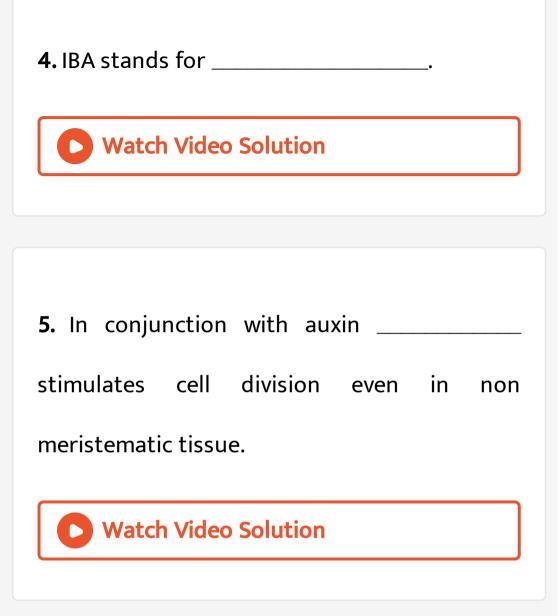
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Fill In The Blanks

1. Cell division and \_\_\_\_\_ are

important aspect of growth and development.



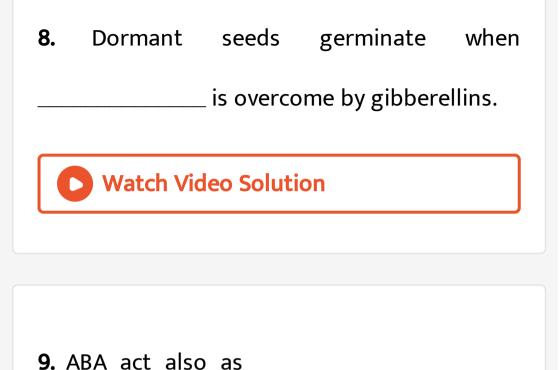


# 6. Gibberellin stimulate stem elongation and leaf \_\_\_\_\_\_\_. Watch Video Solution

7. Ethylene is associated with the process of

\_\_\_\_\_ of plant organ.





hormone.

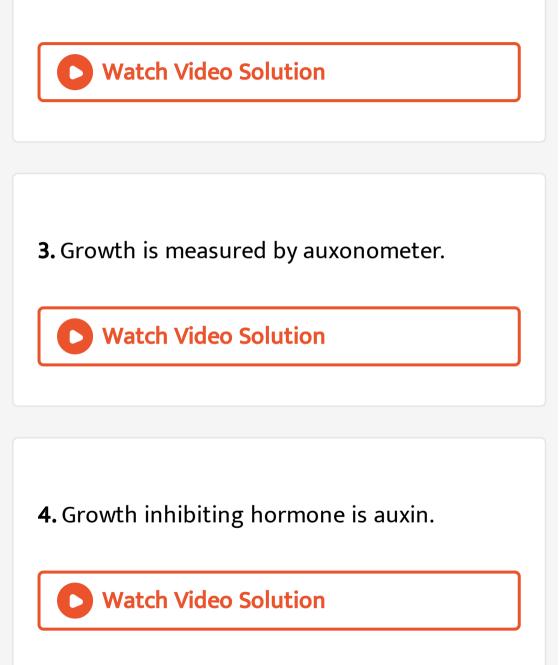
## 10. Gibberellin induce stem elongation in \_\_\_\_\_plants. O Watch Video Solution

### True Of False Statement Questions

**1.** ABA is used in inducing flowering in short

day plant.

2. Growth is not permanent increase in size.



5. Chemically plant growth regulators are indole compounds.

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6. Oxygen is not necessary for seed

germination.

7. Removal of the tipe of coleoptile deprives it

of a growth promoting substance

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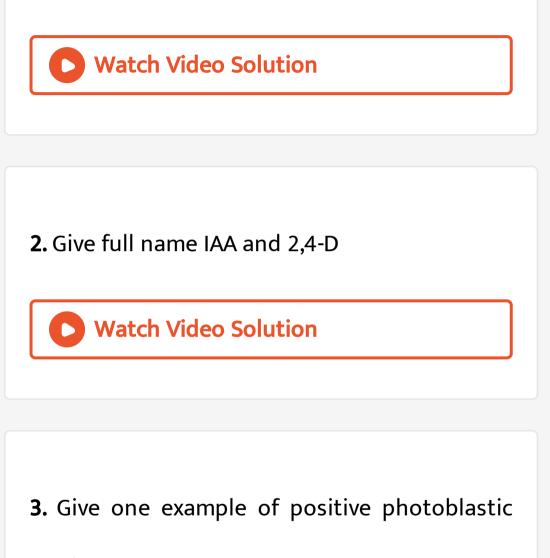
8. Plant growth is stimulated by the presence

of auxins, ethylene and abscisic acid.

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Very Short Answer Type Questions

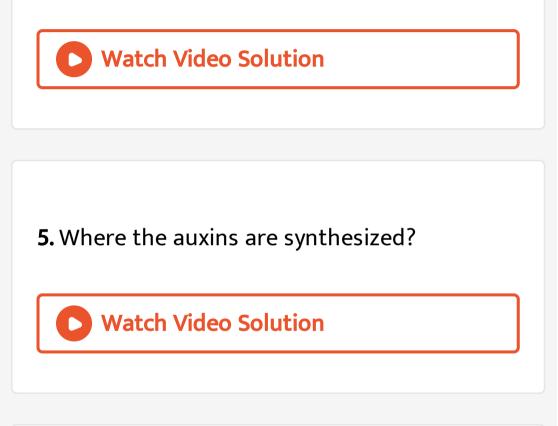
1. Name two long day plant.



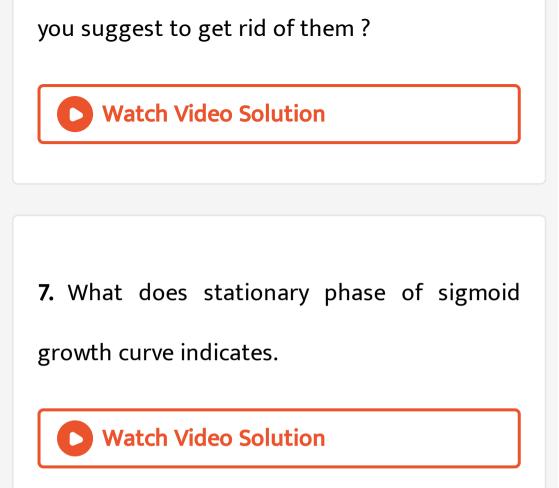
seed.



### **4.** Which hormone promotes leaf fall ?



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

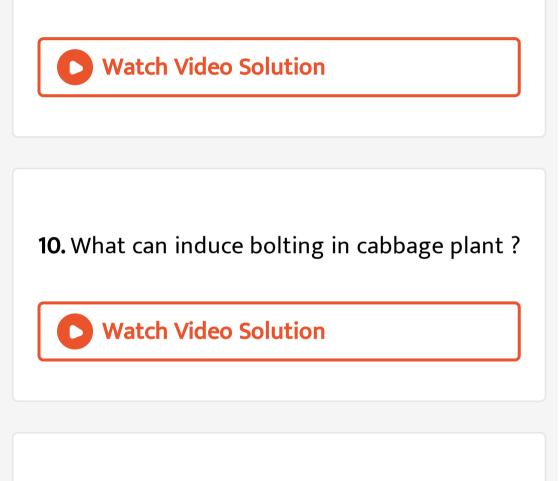


8. Which is the only one gaseous natural plant

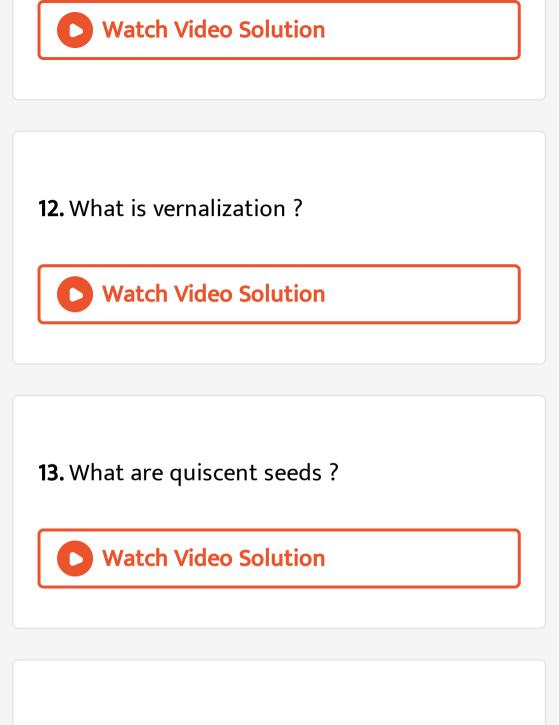
growth regulator.



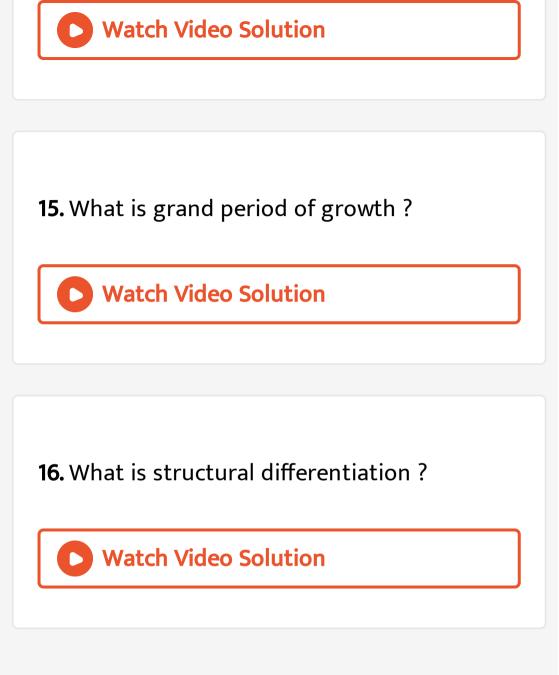




**11.** What does an over ripe apple release which ripens all other apples in the basket ?

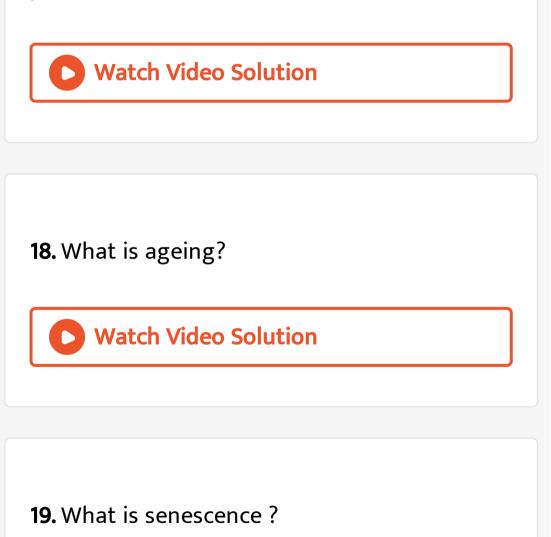


**14.** What is gerontology ?



17. State the function of growth hormones in

plant.



**20.** Where double sigmoid curve is found ?



### **21.** What is macrobiotic ?

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**22.** State about the epigeal.

### **23.** Where vivipary germination is found ?



### **24.** What does a higher C/N ratio do in a

plant?





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 ?

28. Which of the following is used in root

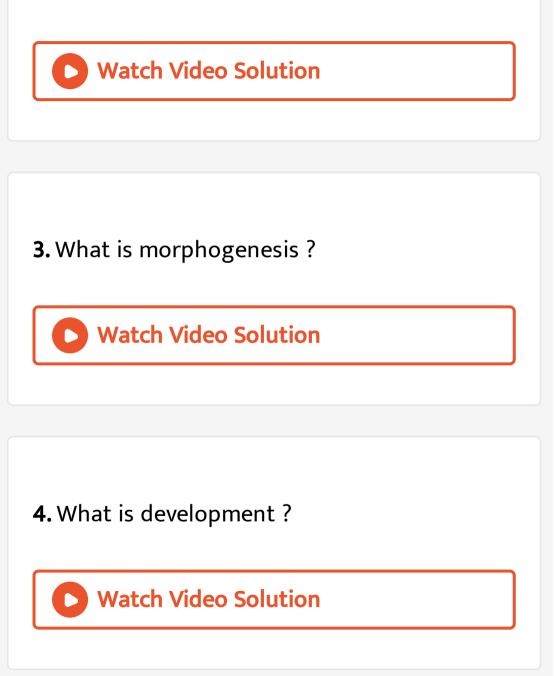
formation on stem cuttings ?

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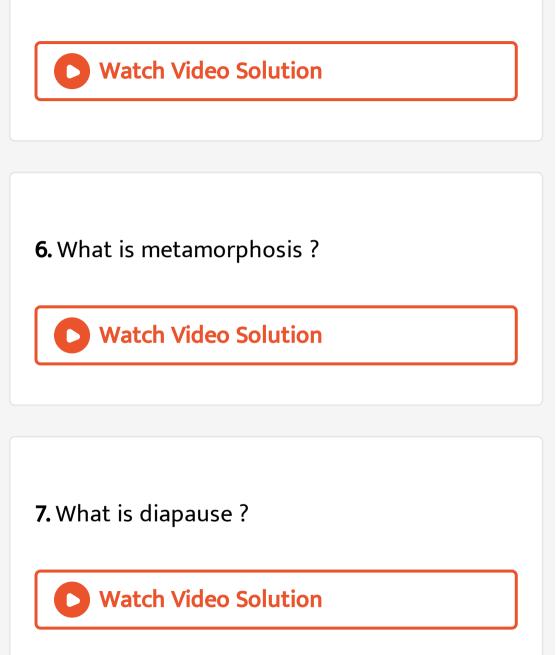
### Short Answer Type Questions

**1.** What is growth ?

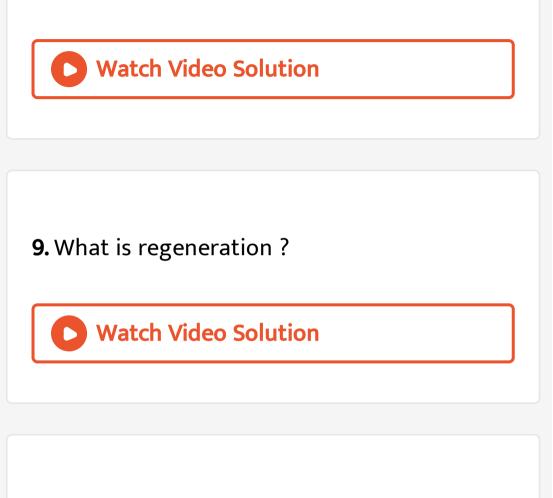
2. What is differentiation ?



5. What is grand period of growth ?



8. What are neoteny and pedogensis?



10. What is abscission ? Name a hormone that

helps in abscission.

## **11.** What is pheromone ?

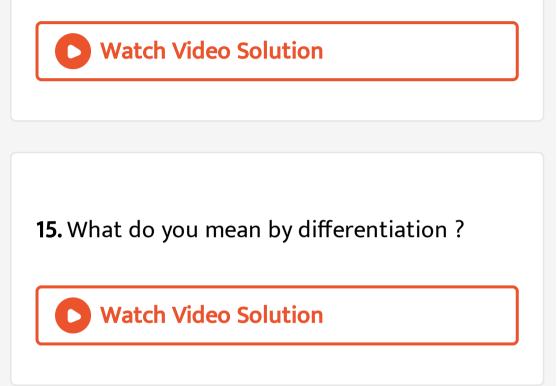


### **12.** What is photoperiodism ?



### **13.** What is growth ring or annual ring ?

**14.** What is sigmoid growth curve ?



16. Define hypogeal germination .

17. What is seed germination ?



18. Give two characteristics of phytohormones.

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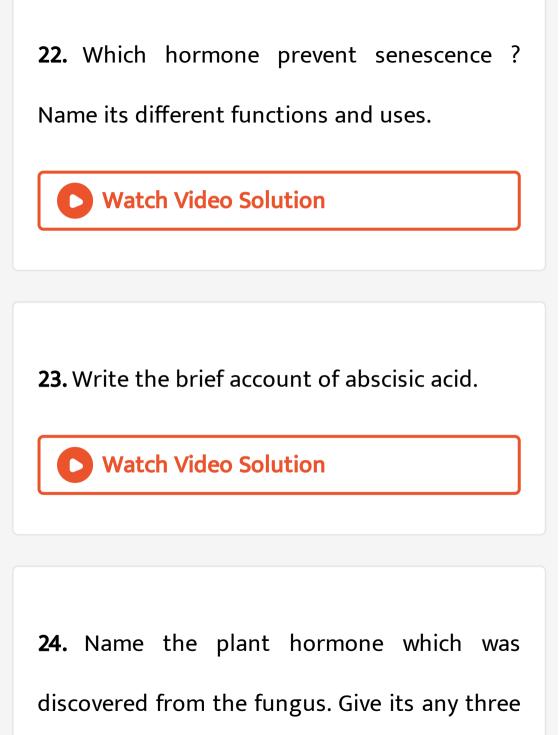
**19.** What do you mean by seed dormancy ?

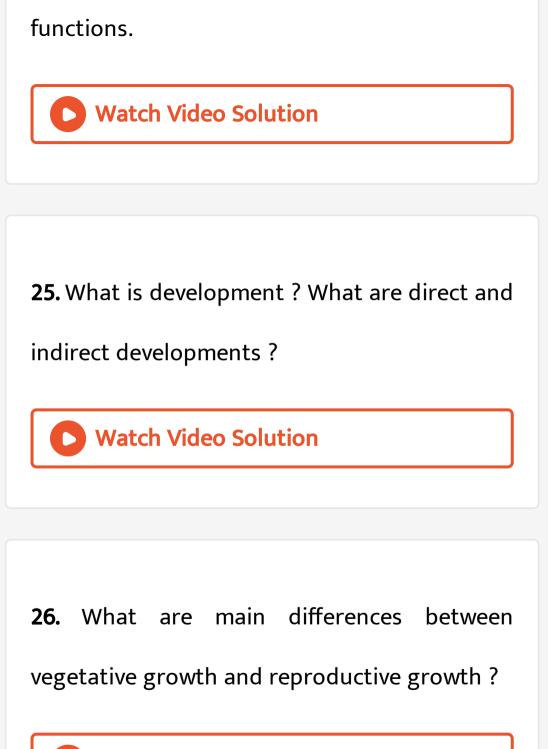
### **20.** Define vernalization.



21. What are the different phases of growth ?

Give the characteristics of each.





## 27. What are the differences between

isometric and allometric growth?

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## 28. What are the phases of growth?

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

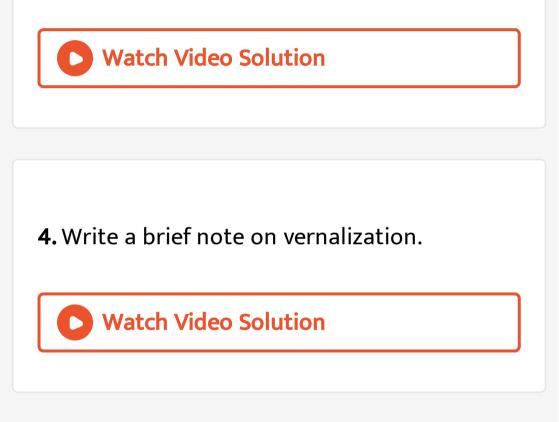
 What is growth ? What are the phases of growth ? Mention the factors of growths.
 Distinguish between growth of plant and animal.

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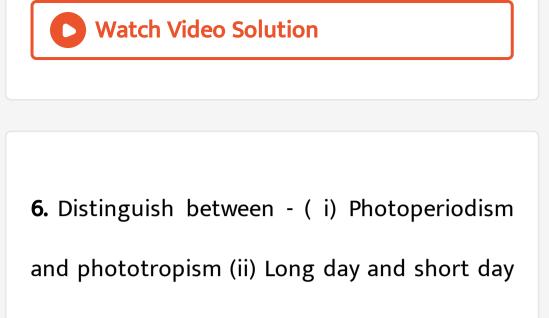
2. Explain the role of factors in growth of

plants and animals.

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



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



plant



7. Discuss the practical application of growth

regulators.



**8.** Write the physiological effect of gibberellins.

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

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

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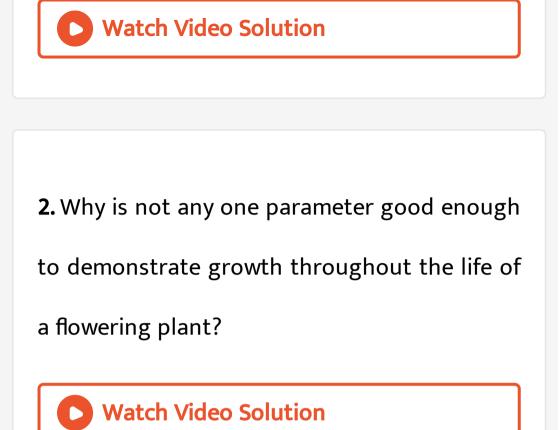
**Ncert Questions** 

1. Define growth, differentiation , development,

dedifferentiation, redifferentiation,

determinate growth, meristem and growth

rate.



- **3.** Describe briefly :
- (a) Arithmetic growth.
- (b) Geometric growth

(c) Sigmoid growth curve

(d) Absolute and relative growth rates



**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.

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 ?

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.

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.

10. Would defoliated plant respond to

photoperiodic cycle ? Why ?



- **11.** What would be expected 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.

