



# BIOLOGY

## BOOKS - CENGAGE BIOLOGY

### RESPONSE AND CO-ORDINATION IN PLANTS

#### Mandatory Exercise

1. Give an example of plant hormone that promotes growth



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2. What does a stem (or shoot) do in response to light?



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3. The other name for thigmotropism is -----



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4. Nyctinastic movement occur due to the

A. turgor changes in the leaves

B. shock response

C. response to light

D. response to gravity

**Answer:**



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5. A hormone that inhibits plant growth is

A. auxin

B. abscisic acid

C. gibberellin

D. cytokinin

**Answer:**



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6. Which hormone instigates 'the triple response'?

A. Gibberellin

B. Auxin

C. Cytokinin

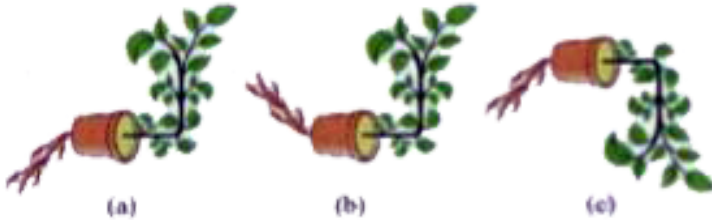
D. Ethylene

**Answer:**



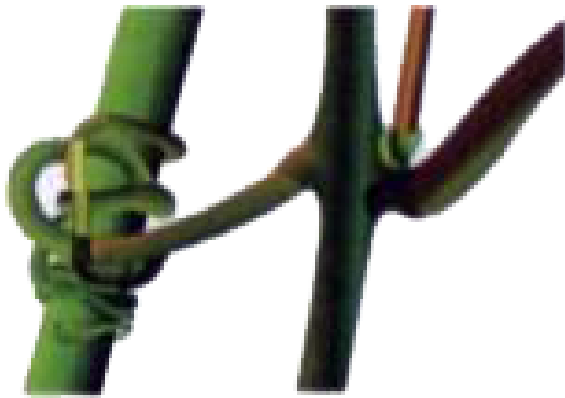
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7. In the figures (a), (b), and (c) which appears more accurate and why?



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8. What type of plant movement is seen in the diagram of coiling of tendrils?



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9. Match the following with one or more than one correct answer:

Column A	Column B
(a) Photoperiodism	(i) Shoot tip
(b) Seismonasty	(ii) Development of lateral shoots
(c) Auxin	(iii) Effect daily duration of light
(d) Cytokinin	(iv) Apical dominance
(e) Abscisic acid	(v) Required for differentiation of cells
	(vi) Induces dormancy
	(vii) Response diurnal change



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10. Lateral stem development is controlled by the relative levels of

A. abscisic acid

B. cytokinins



C. auxins

D. ethylene

**Answer:**



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**11. Negative geotropism is observed in**

A. pneumatophores

B. shoots

C. roots

D. leaves

**Answer:**



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**12.** The diurnal turgor changes in the leaves of Oxalis results in

A. folding up at night

B. folding up only during day

C. folding up during night and opening during day

D. do not fold either in night or day

**Answer: C**



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**13.** A vine growing up the wall producing creepers towards light source outside your classroom is/ are an example of a response to

- A. positive phototropism
- B. positive thigmotropism
- C. nastic movement
- D. negative gravitropism

**Answer: A::B::D**



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**14.** To brighten her home in the winter a woman decides to force an iris to bloom. To achieve this she should

A. expose the plant to long periods of  
darkness

B. expose the plant to short periods of  
darkness

C. interrupts a long period of darkness  
with a flash of light

D. water it generously

**Answer: A::B::C::D**



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15. Cytokinin promotes

- A. shoot formation
- B. lateral bud growth
- C. roots
- D. cork cambium

**Answer: A**



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**16.** Precursor of auxin hormone is

A. Ethylene

B. Tryptophan

C. Methionin

D. DNA

**Answer: C**



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17. Ageing of leaves and shoots is called

A. Chlorosis

B. Wilting

C. Senescence

D. Necrosis

**Answer: C**



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**18.** A plant growing in complete darkness shows

A. Vernalisation

B. Etiolation

C. Chlorosis

D. Wilting

**Answer: B**



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19. Precursor of ethylene hormone is

A. Methionine

B. Glycine

C. Alanine

D. Sucrose

**Answer: A**



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20. The hormone responsible for apical growth is

A. IAA

B. Abscisic acid

C. GA

D. All of the above

**Answer: A**



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21. Ripening of fruits is due to which plant hormone.

A. Auxin

B. Cytokinin

C. Abscisic acid

D. Ethylene

**Answer: D**



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22. The movement of pollen tube towards ovule is

A. Chemotropism

B. Haptotropism

C. Chemonastic

D. Photonasty

**Answer: A**



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23. Anti-transpirant hormone is

A. Auxin

B. Abscisic acid

C. GA

D. Ethylene

**Answer: B**



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24. Growth hormone connected with bolting are

A. Auxin

B. Cytokinin

C. Gibberellin

D. Abscisic acid

**Answer: C**



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25. Sometimes spots on potato during storage is due to the formation of

A. Ethylene

B. Gibberellin

C. Cytokinin

D. Auxin

**Answer: B**



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26. Hormone produced during leaf fall is

A. Cytokinin

B. Florigen

C. ABA

D. IAA

**Answer: C**



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27. Which of the following is a flowering hormone?

A. Etiolein

B. Vernalin

C. Florigen

D. IAA

**Answer: C**



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28. Bakane disease of rice is due to

A. NAA

B. 2,4-D

C. IAA

D. GA

**Answer: D**



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29. Development of shoot and root is determined by

A. Enzymes

B. Temperature

C. Plant nutrients

D. Cytokinin and Auxin ratio

**Answer: D**



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30. Some flowers open in the morning and close during evening because of

A. Photonasty

B. Phototropism

C. Phototaxis

D. Nyctinasty

**Answer: A**



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31. Thigmotropism is best exhibited by

A. Thorne

B. Tendrils

C. Root apex

D. Shoot tip

**Answer: B**



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**32.** The movement occurring due to external stimulus is

A. Tropic

B. Nastic

C. Tactic

D. All of the above

**Answer: D**



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**33.** During ripening of fruits, the rate of respiration which abruptly increases is called

- A. Aerobic respiration
- B. Climacteric respiration
- C. Anaerobic respiration
- D. Fermentation

**Answer: B**



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**34.** The hormone responsible for plant and seed dormancy during drought is

A. IBA

B. NAA

C. ABA

D. Zeatin

**Answer: C**



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**35.** The movement of sunflower towards the direction of Sun is

- A. Photonasty
- B. Phototropism
- C. Nyctinasty
- D. Seismonasty

**Answer: B**



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**36.** Anti-gibberellin is

A. Cycocel

B. Plastoquinone

C. LAA

D. Ubiquinone

**Answer: A**



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37. Negative phototropism occurs in

A. Root

B. Stem

C. Leaf

D. Flower

**Answer: A**



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**38.** The hormone responsible for ageing is

A. GA

B. LAA

C. ABA

D. Cytokinin

**Answer: C**



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**39.** Treatment of seeds at low temperature under moist conditions for breaking their dormancy is

A. Vernalisation

B. Radiation

C. Stratification

D. Scarification

**Answer: A**



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**40.** The movement stimulated by external factor is

A. Spontaneous movement

B. Autonomic movement

C. Physical movement

D. Paratonic movement

**Answer: D**



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41. Parthenocarpic fruit cannot be produced by the application of

A. IAA

B. 2,4-D

C. ABA

D. IBA

**Answer: C**



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42. Study of phototropic response leads to the discovery of

A. Cytokinin

B. Ethylene

C. GA

D. Auxin

**Answer: D**



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**43.** Cytokinins which have specific effect in Cytokinesis are modified forms of

A. Cytosine

B. Adenine

C. Guanine

D. Thiamine

**Answer: B**



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**44.** Which of the following is a short day plant?

A. Wheat

B. Oat

C. Rice

D. Spinach

**Answer: C**



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45. Which of the following is a long day plant?

A. Arabidopsis

B. Xanthium

C. Dahlia

D. Rice

**Answer: A**



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**46.** Which of the following is a day neutral plant?

A. Tomato

B. Radish

C. Cotton

D. All of these

**Answer: A**



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47. The response of plants to the relative length of day light and dark period is called

A. Photoperidism

B. Phytochrome

C. Light reaction

D. None of these

**Answer: A**



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**48.** Photoperiodism was discovered by

A. Garner and Allard

B. Einstein

C. Borthwick

D. Mendel

**Answer: A**



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**49.** Phytochrome is a photoreceptor which absorbs

A. Red light

B. Far-red light

C. Both A and B

D. None of these

**Answer: C**



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50. Photoperiodism is associated with

A. Auxin

B. Chlorophyll

C. Florigen

D. GA

**Answer: C**



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51. Pr state of photochrome absorbs light wavelength of

A. 660 nm

B. 640 nm

C. 620 nm

D. 720 nm

**Answer: A**



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52. Which ones are long day plants?

A. Wheat, poppy, soyabean

B. Wheat, poppy, beet

C. Wheat, oat, soyabean

D. Wheat, xanthium, paddy

**Answer: B**



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1. Vernalisation is the

- A. growth curve in response to light
- B. recurrence of day and night
- C. effect of day length on plant growth
- D. acceleration of the ability to flower by  
low temperature treatment

**Answer: D**



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2. The pigment that absorbs red and far red light in plant is

- A. cytochrome
- B. xanthophyll
- C. phytochrome
- D. carotene

**Answer: C**



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3. The naturally occurring growth inhibitor is

A. IAA (indoleacetic acid)

B. ABA (abscisic acid)

C. NAA (naphthalene acetic acid)

D. GA (gibberellic acid)

**Answer: A**



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4. During adverse environmental condition plants develop a stress hormone, which is

A. Abscisic acid

B. Ethylene

C. Benzyl amino purine

D. Dichlorophenoxy acetic acid

**Answer: A**



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5. Which of the following test is performed to demonstrate the presence of gibberellin?

A. Bolting of cabbage

B. Differentiation of shoots in tobacco callus culture

C. Rapid division in carrot cells

D. Elongation of Avena coleoptile

**Answer: A**



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**6.** This question consists of two statements:

Assertion (A) and Reason (R). To answer this question, mark the correct alternative as per the options given below:

Assertion (A): A correct concentration of auxin and cytokinin is required for the development of root and shoot in a callus.

Reason (R): When the ratio of auxin to cytokinin is high, then only roots develop but when the ratio of cytokinin to auxin is high then only shoots develop

A. Both (A) and (R) are true and (R) is the correct explanation of A.

B. Both (A) and (R) are true and (R) is not the correct explanation of A.

C. Both (A) is true statement but (R) is false.

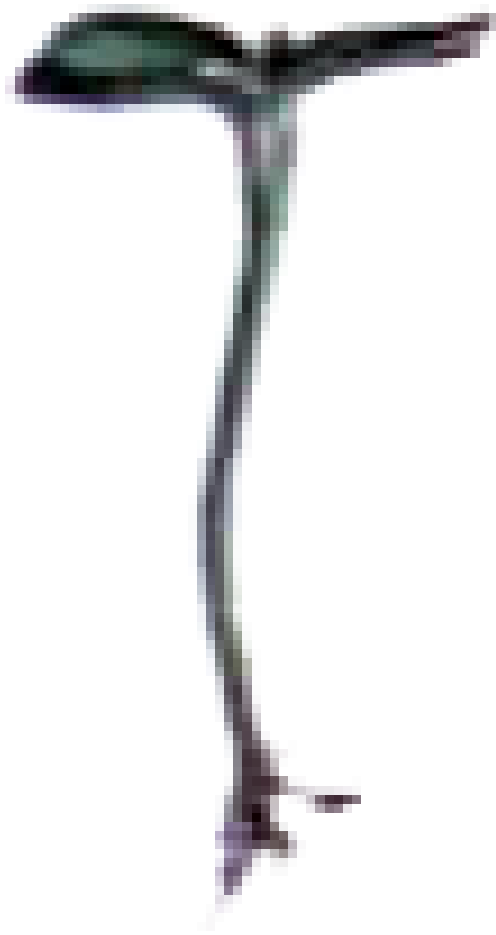
D. Both (A) and (R) are false

**Answer: A**



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7. Sunflower seedling, growing in moist soil in a flower pot, was placed inside a cardboard box with a lid. A window was cut in one side of the box to admit light on the right-hand side of the seedlings. The drawing shows the shoot of one of the seedlings at the start of the experiment.



(i) What name is given to the response made by the seedling?

(ii) What was the stimulus which produced this response?

(iii) What control experiment could be set up to check that the response was made to the stimulus suggested in (b)?

A. (i) = Phototropism, (ii) = sunlight, (iii) = plant can be kept in a dark chamber

B. (i) = Geotropism, (ii) = sunlight, (iii) = plant can be kept under tube light

C. (i) = Phototropism, (ii) = water, (iii) = plant can be kept under tube light

D. (i) = Geotropism, (ii) = gravity, (iii) = plant

can be kept in a dark chamber

**Answer: A**



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**8.** Match the following columns and choose the option which identifies the correct

matching.

	<b>Column I</b>		<b>Column II</b>
a.	IAA	1.	Cell division.
b.	Cytokinin	2.	Fruit ripening
c.	Ethylene	3.	Sigmoid
d.	Growth curve	4.	Natural auxin

A. a-4, 6-1, -2, -3

B. a-1, 6-4, 6-2, 2-3

C. 2-2, 6-1, c-4, -3

D. a-3, 6-1, c-4, d-2

**Answer: A**

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9. Richmond. Lang effect is

A. The effect of kinetins in delaying senescence

B. The effect of auxins on root and shoot formation

C. The effect of traumatic acid in wound formation

D. None of these

**Answer: A**

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**10.** Identify the incorrect statement from the following.

- A. Auxin is a gaseous hormone.
- B. Gibberellin was first isolated from fungi.
- C. IAA is a natural auxin.
- D. Cytokinin promote cell division.

**Answer: A**



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## Challenging Exercise

1. Ethylene is present in ripened fruits. What will happen to unripened tomatoes which are kept among ripened fruits?



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2. Apart from the hormones you have studied, which pigment is involved in the production of

hormone that assists in the blooming of flowers?



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3. Why does the sunflower turn east and face sun?



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