Chapter 11

Put line under your answer! There is only one correct answer in the multiple choice questions

1. **Which of the following apparently affects stems more than it does roots?**

   a) cytokinin
   b) ethylene
   c) abscisic acid
   d) gibberellins
   e) auxin

2. **Which of the following is used by nurseries to cause active plants to become dormant?**

   a) cytokinin
   b) ethylene
   c) abscisic acid
   d) gibberellins
   e) auxin

3. **Which of the following plant movements is due to primarily to an external stimulus?**

   a) helical (spiraling) movement
   b) nodding movement
   c) twining movement
   d) gravitropism
   e) None of these answers are correct

4. **Plants that have two critical photoperiods are called**

   a) short-day plants
   b) long-day plants
   c) day-neutral plants
   d) critical-day plants
   e) intermediate-day plants

5. **The suppression of the growth of axillary or lateral buds is called**

   a) metabolic inhibition
   b) dioxin toxic syndrome

c) recessive meristem induction
d) cytokinin- gibberellin negation
e) apical dominance

6. The plant physiologist credited with the discovery of auxins was

a) Frits Went
b) Charles Darwin
c) Francis Darwin
d) R.F.M. van Steveninck
e) P.F. Wareing

7. Which of the following play a major role in water-conservation movements of grasses?

a) bulliform cells
b) epidermal cells
c) mesophyll cells
d) glands
e) fibers

8. Which of the following groups of plants tends to be the least sensitive to auxins?

a) herbaceous dicots
b) monocots
c) woody dicots
d) flowering plants with net-veined leaves
e) plants with flower parts in multiples of 4 or 5

9. Which of the following is a phenylacetic acid (PAA)?

a) a gibberellin
b) an auxin
c) a cytokinin
d) an ethylene derivative
e) None of these answers are correct

10. The defoliant Agent Orange was a 1-to-1 mixture of 2,4-D and

a) TCDD
b) 2,4,5-T
c) DDT
d) TCP
e) 2,4,6-Z

11. Which of the following functions as a precursor in the synthesis of gibberellins?

a) Vitamin A

b) cytokinin
c) Vitamin D
d) Acetyl CoA
e) starch

12. Which of the following is apparently synthesized from carotenoid pigments in plastids?

a) abscisic acid
b) gibberellins
c) ethylene
d) auxins
e) cytokinins

13. Which of the following promote(s) senescence in plant parts?

a) abscisic acid
b) auxins
c) ethylene
d) None of these answers are correct
e) More than one of these answers are correct

14. Which of the following is an effect of light on auxin?

a) It develops into a more complex substance
b) It disintegrates completely
c) It migrates away from the light against a diffusion gradient
d) It is increased in quantity
e) It produces a stronger response

15. A precursor is

a) a traveling electron
b) a growth-regulating substance
c) a simple molecule that is converted by living organism to a more complex molecule
d) a gene that determines writing style
e) one who is predisposed to using profanity

16. As living individuals grow and reproduce their response to environmental stimuli may include

A. movement
B. increase in size
C. change in position
D. all of these
E. none of these

17. The plant hormone that is an "anti-transpirant" is:

a. abscisic acid

b. gibberellin
c. indole acetic acid
d. ethylene
e. cytokinin

18. Nastic movements
a. depend on the direction of the stimulus.
b. are independent of the direction of the stimulus.
c. either a or b.

19. Gibberellins
a. are growth promoters.
b. bring about elongation of cells.
c. both a and b.

20. Cytokinins
a. promote cell division.
b. prevent senescence.
c. initiate growth.
d. all of the above.

21. Phytochromes are involved in
a. seed germination.
b. stem growth.
c. flowering.
d. all of the above.

22. Which of the following are events of the Calvin cycle?
a. carbon-dioxide fixation
b. carbon-dioxide reduction
c. regeneration of RuBP
d. all of the above

23. The six-carbon molecule resulting from carbon-dioxide fixation immediately breaks down to form _____.
a. two PGA three-carbon molecules
b. three PGA two-carbon molecules
c. neither a or b

24. In a C4 plant, the _____ cells contain chloroplasts.
a. bundle sheath
b. mesophyll
c. both a and b

25. During the energy-capturing reactions of photosynthesis, which of the following occurs?
a. light-dependent reactions

b. light-independent reactions

c. both a and b

26. ATP production during photosynthesis is sometimes called photophosphorylation because _____.

a. light is involved

b. water is involved

c. oxygen is involved

d. all of the above

****

Put (True) or (False) with each following sentences.

27. Phototropic responses may vary according to light intensity ( ).

28. Grass leaves may roll up in dry weather when certain cells lose their turgor ( ).

29. Apical dominance can be offset with an application of cytokinins to axillary buds ( ).

30. Day-neutral plants do not need light in order to flower ( ).

31. Tissue culture involves the cultivation of cells on a tree branch ( ).

32. Phytochrome pigment is known to occur in at least three stable forms ( ).

33. Garner and Allard were responsible for coining the term photoperiodism ( ).

34. Both photosynthesis and cellular respiration make use of an electron carrier and an electron transport system ( ).

****

1. Auxin stimulates the growth of root cells. (true)
2. Auxin stimulates the growth of stem cells. (false)
3. Apically-produced auxin stimulates the growth of axial buds (false).

Matching: Write in meddle column the number for the best answer.

1. Growth	10	is synthesized in plastids, apparently from carotenoid pigments.
2. Development	9	is vital to the process of respiration, functions as a precursor in the synthesis of GA.
3. Hormones	8	stimulate the formation of roots on almost any plant organ.
4. Darwin	7	stimulate the enlargement of cells.
5. Went	6	measured the angle of curvature.

6. Bioassay for auxin	5	called the auxin cause coleoptiles to bend.
7. Auxins	4	noted that coleoptiles bend toward a light source.
8. IAA or auxin	3	are produced in minute amounts in one part of an organism and usually transported to another part.
9. Acetyl coenzyme A	2	is a change in form as a result of growth and differentiation combined.
10. ABA	1	is defined as an "irreversible increase in volume due to the division and enlargement of cells."
11. Gibberellins	20	allowing a lateral bud to grow.
12. Cytokinins	19	can be offset with an application of cytokinins to axillary buds.
13. Abscisic acid	18	is believed to be brought about by an auxinlike inhibitor in a terminal bud.
14. Ethylene gas	17	is the suppression of the growth of the lateral buds.
15. Senescence	16	are growth movements that result primarily from internal stimuli.
16. Plant movements	15	is the breakdown of cell parts that leads to the death of the cell.
17. Apical dominance	14	hastens ripening of fruits and is used commercially to ripen green fruits.
18. Apical dominance	13	causes buds to become dormant and apparently helps leaves respond to excessive loss of water.
19. Apical dominance	12	promote cell division and can be used to stimulate the growth of axillary buds.
20. Removal of the terminal bud	11	promote stem growth without corresponding root growth.
21. Gibberellins	30	stem tips bent toward light.
22. Ethylene	29	the flowering of is independent of day length.
23. Bulliform cells	28	have two critical photoperiods.
24. Turgor movements	27	will not flower unless the day length is longer than a critical day length.
25. Photoperiodism	26	will not flower unless the day length is shorter than a critical day length.
26. Short-day plants	25	is a response of plants to the duration of day or night.
27. Long-day plants	24	result from changes in internal water pressures.
28. Intermediate-day plants	23	partially collapse under dry conditions and thus bring about the rolling of the leaf blade.
29. Day-neutral plants	22	produced by the apple caused abscission of the holly leaves.

30. Positive phototropism	21	Led to grow tall plants and flowering.
31. No flowers	39	is a state in which a seed is unable to germinate unless appropriate environmental conditions exist.
32. Phytochromes	38	is a period of growth inactivity in seeds, buds, bulbs, and other plant organs.
33. Day light	37	shoots forming the main axis of plants.
34. In the dark	36	primary roots of plants.
35. Gravitropisms	35	growth responses to the stimulus of gravity.
36.Positively gravitropic	34	Pfr will convert back to Pr.
37. Negatively gravitropic	33	generally results in more Pr being converted to Pfr (the active form) than *vice versa*.
38. Dormancy	32	occur in two forms, each of which can be converted to the other by the absorption of light.
39. Quiescence	31	when the short-day plant exposed to long days.

For each of the following, indicate the appropriate hormone (auxin, gibberellin, ABA, cytokinin, ethylene). There may be more than one correct answer for some questions.

1. ____ amounts that stimulate shoot growth inhibits roots
2. ____ delays senescence
3. ____ active in phototropism and gravitropism
4. ____ involved in leaf abscission
5. ____ promotes fruit ripening
6. ____ promotes senescence
7. ____ maintains dormancy
8. ____ stimulate root initiation
9. ____ 2,4-D is a synthetic version
10. ____ affects sex expression in plants
11. ____ sesquiterpene
12. ____ stimulates seed germination
13. ____ reverses dwarfing in some plants
14. ____ methionine is the amino acid precursor
15. ____ napthalene acetic acid has similar activity
16. ____ often antagonistic to effects of ABA
17. ____ parthenocarpic fruit development
18. ____ promotes stem elongation in intact plants
19. ____ involved in apical dominance

20. ____ breaks dormancy in seeds and buds
21. ____ biosynthesized from tryptophan
22. ____ causes loosening of the cell wall
23. ____ diterpene
24. ____ closes stomata
25. ____ controls morphogenesis of plant tissue cultures
26. ____ derived from carotenes (tetraterpenes)