Plant Responses to Internal and External Signals
Chapter 39

1. What substances are known as intercellular messengers in plants?
2. List the five major plant hormones and their functions.
3. How is auxin transported in cells?
4. How does auxin function in cell elongation?
5. What is the effect of cytokinins on cell division and differentiation?
6. What role do cytokinins play in apical dominance?
7. When do cytokinin and auxin act synergistically? Cite an example.
8. When do cytokinin and auxin act antagonistically? Cite an example.
9. Explain the role of gibberellins on stem elongation, fruit growth, and germination.
10. What two functions does abscisic acid have on in the life of the plant?
11. Explain the role played by ethylene in senescence, fruit ripening and leaf abscission.
12. Define phototropism, gravitropism, and thigmotropism.
13. Explain the underlying mechanisms for each of the tropisms in the previous question.
14. Do plant stems exhibit positive or negative phototropism?
15. Do plant roots exhibit positive or negative phototropism?
16. Do plant stems exhibit positive or negative gravitropism?
17. Do plant roots exhibit positive or negative gravitropism?
18. How are the rapid leaf movements in plants such as *Mimosa pudica* possible?
19. What are sleep movements?
20. What is meant by circadian rhythm?
21. Define photoperiodism.
22. Describe the photoperiodic control of flowering with reference to short-day plants, long-day plants, and day-neutral plants?
23. Indicate the time of the year when each of the plant types flower.
24. What is the importance of night?
25. What mechanism in plants is used to measure the length of darkness in a photoperiod?
26. What factors, external and internal, affect the annual cycle of plants?
27. Explain the control system which allows a plant to cope with each of the following:

a) water deficit
b) oxygen deprivation
c) heat stress
d) cold stress
e) herbivores
f) pathogens