AP: CHAPTER 39: CONTROL SYSTEMS IN PLANTS

1. How does light influence sprouting potatoes?

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2. Describe the steps of the signal-transduction pathway.

a. Reception _____________________________________________________________

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b. Transduction __________________________________________________________

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c. Response ______________________________________________________________

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3. What did the early experiments on photoperiodism demonstrate?

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4. What does auxin do in plant cells that cause elongation?

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5. Define apical dominance.

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6. Identify two functions of gibberellins.

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7. Identify a few plant responses to ethylene.

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8. Are all wavelengths of light equal when it comes to phototropism? Explain.

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9. What are the two forms of phytochrome and how are they switched?

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10. When do short-day plants flower?

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11. What happens when short-day plants receive flashes of light?

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12. When do long-day plants flower?

________________________________________________________________________

________________________________________________________________________
13. What happens when long-day plants receive flashes of light

14. What may be a cause of root gravitropism?

15. What is the mechanism that causes Mimosa leaves to close?
<table>
<thead>
<tr>
<th>Hormone</th>
<th>Where Produced or Found in Plant</th>
<th>Major Functions</th>
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</thead>
<tbody>
<tr>
<td>Auxin (IAA)</td>
<td>Embryo of seed, meristems of apical buds, young leaves</td>
<td>Stimulates stem elongation (low concentration only); root growth, cell differentiation, and branching; regulates development of fruit; enhances apical dominance; functions in phototropism and gravitropism.</td>
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<tr>
<td>Cytokinins (such as zeatin)</td>
<td>Synthesized in roots and transported to other organs</td>
<td>Affect root growth and differentiation; stimulate cell division and growth; stimulate germination; delay senescence.</td>
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<tr>
<td>Gibberellins (such as GA₃)</td>
<td>Meristems of apical buds and roots, young leaves, embryo</td>
<td>Promote seed and bud germination, stem elongation, and leaf growth; stimulate flowering and development of fruit; affect root growth and differentiation</td>
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<tr>
<td>Abscisic acid</td>
<td>Leaves, stems, roots, green fruit</td>
<td>Inhibits growth; closes stomata during water stress; counteracts breaking of dormancy</td>
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<tr>
<td>Ethylene</td>
<td>Tissues of ripening fruits, nodes of stems, aging leaves and flowers</td>
<td>Promotes fruit ripening, opposes some auxin effects; promotes or inhibits growth and development of roots, leaves, and flowers, depending on species</td>
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<tr>
<td>Brassinosteroids (such as brassinolide)</td>
<td>Seeds, fruits, shoots, leaves, and floral buds</td>
<td>Inhibits root growth; retards leaf abscission; promotes xylem differentiation</td>
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