

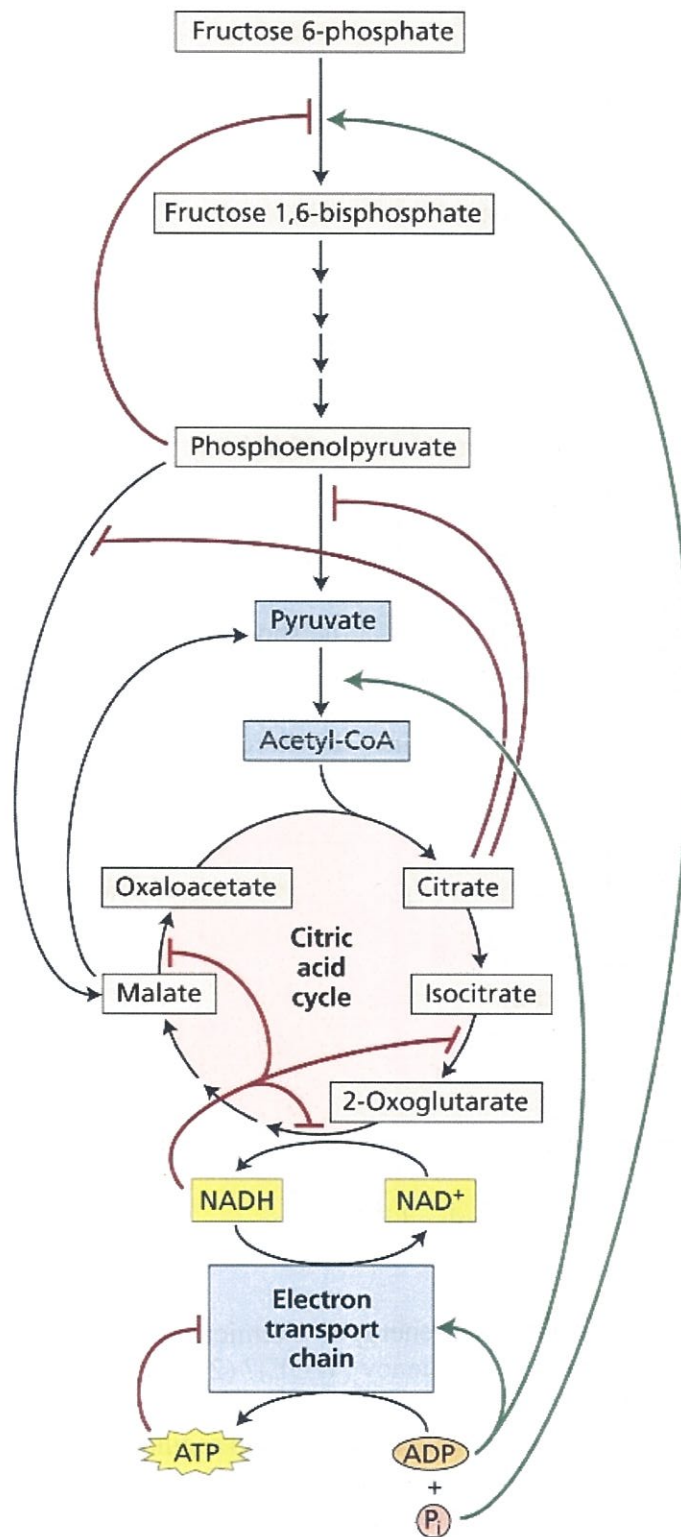
一、 解釋名詞：每題 2 分

1. Triple responses and two-component system
2. Photomorphogenesis and skotomorphogenesis
3. Primary dormancy and secondary dormancy
4. Shade avoidance syndrome and phototropism
5. Basipetal transport and acropetal transport

二、 簡答題：

1. Discuss the mechanism of action of florigen in stimulating flowering in Arabidopsis. (5 points) What other factors influence flowering? (5 points)
2. Discuss the role of auxin and auxin transporters in the formation of the primary vascular system of stems and the venation pattern of leaves. (5 points)
3. Describe the interactions of hormones and sucrose in the regulation of axillary bud growth in stems. (5 points)
4. Using cereal endosperm as an example, discuss the mechanism of the mobilization of seed storage reserves. (10 points)
5. Discuss how auxin functions in organogenesis at the shoot apical meristem. (5 points)
6. Discuss the role of phytochrome interacting factors (PIFs) in photomorphogenesis. (5 points)
7. (1) What is osmosis? (2) What factor determines the direction of osmosis? (in the other words, what is the driving force of osmosis?) (5 points)
8. Water transport from roots to leaves in a plant doesn't consume any metabolic energy. The whole process is driven passively by the water potential gradient or pressure gradient. What special structures of vascular plants are required and ensure the continuity of the water column? (6 points)
9. According to what you've learned in Plant Nutrition, what factors will affect a plant to uptake nutrients from soil? (6 points)
10. What is cation exchange? Normally, cation exchange will make the soil more fertile. However, in what condition, cation exchange will even reduce the mineral nutrients in the soil? (6 points)
11. Compare xylem transport and phloem translocation with the following aspects. (10 points)
 - (1) The types and properties of cells involved in the process
 - (2) Direction
 - (3) Driving force
12. What step of light reactions transfers solar energy to chemical energy? (3 points)
13. (1) What is the definition of water use efficiency (WUE)? (2) Why do CAM plants have the lowest WUE? (4 points)
14. The regulation of respiration in plants is called "bottom-up regulation". (1) What does "bottom-up" mean? (2) In a cell with low demand of ATP (less active cell), what changes do you expect to see in the respiration reactions according to the bottom-up regulation (figure below)? (6 points)

見背面



15. What can be considered as constitutive defense mechanisms in plants? (4 points)

試題隨卷繳回