

系所組別： 熱帶植物科學研究所

考試科目： 植物生理學

考試日期：0308，節次：3

※ 考生請注意：本試題 可 不可 使用計算機

1. Briefly describe the function and deficient symptom of potassium in plants. (10 points)
2. What are advantage and disadvantage of VIGS (virus-induced gene silencing) method for analysis of plant gene function? (10 points)
3. Your friend Barack is growing a garden at home. He planted some rice seeds and some lettuce seeds deep in the soil in his garden a few days ago. He tells you that his rice seedlings are doing well, but that the lettuce plants never grew. Why did this happen and what advice would you give Barack to improve his chances of successfully growing lettuce in his garden? (10 points)
4. What are the differences between a hormone-insensitive mutant, a hormone-deficient mutant, and a constitutive response mutant? What experiment can be done to distinguish a hormone-insensitive mutant from a hormone-deficient mutant ? (15 points)
5. Briefly explain the following terms (25 points, 5 points each)
 (A) Circadian rhythms (B) Vernalization (3) Apical dominance (4) Hypersensitive response (5) Adventitious roots
- 6-15. Matching (30 points, 3 points each, use the letter for the best matching answer no more than once)

| | |
|---|-----------------------|
| 6. Membrane that contains the photosystems | A. malate |
| 7. enzyme for assimilation of C in a C3 plant | B. P700 |
| 8. Releases CO2 in bundle sheath cells of maize | C. thylakoid |
| 9. Membrane that surrounds the vacuole | D. aphid stylets |
| 10. Reaction center in photosystem I | E. Casparian strip |
| 11. biological tool for collecting phloem sap | F. cuticle |
| 12. amide used to transport N in xylem | G. root hair |
| 13. waxy layer at root endodermis | H. PEP carboxylase |
| 14. waxy coating on leaf epidermis | I. F0-F1 ATP synthase |
| 15. mitochondrial enzyme for ATP synthesis | J. Rubisco |
| | K. pectin |
| | L. P680 |
| | M. glutamine |
| | N. NADPH oxidase |
| | O. tonoplast |