

I. 問答題:

1. What is a testcross? (2%) What is its purpose? (2%)
2. Explain the following terms: (6%)  
(A) synaptonemal complex; (B) epistasis; (C) heterochromatin
3. List and briefly describe the steps used in recombinant DNA technology. (10%)
4. List five attributes of *Arabidopsis thaliana* that make it an ideal model plant for molecular genetic research. (10%)
5. What important kind of mutualism has evolved between plants and bacteria? (5%)  
Between plants and soil fungi? (5%)
6. Compared to a solution of isolated chlorophyll, why do intact chloroplasts release less heat and fluorescence when illuminated? (5%)
7. What are homeotic genes?(4%) Give examples that illustrate the role of homeotic genes in flower development.(6%)
8. What is meant by chemiosmotic coupling? (5%)
9. When the poison cyanide blocks the electron transport chain, glycolysis and citric acid cycle soon grind to a halt as well. Why do you think they stop? (5%)
10. How do phytochrome molecules help the plant recognize dawn each day? (5%)

II 解釋名詞(20%)

1. deuteromycetes
2. chloroplast endoplasmic reticulum
3. sporopollenin
4. totipotent
5. resolving power
6. monophyletic
7. tangential section
8. sporic meiosis
9. cohesion-tension theory
10. tunica-carpus

見背面

III. Name the structure (use English term) of the cell in the following: (10%)

- (A) \_\_\_\_\_: membrane of the vacuole
- (B) \_\_\_\_\_: plastid stores starch
- (C) \_\_\_\_\_: structures within chloroplasts; stacked of thylakoids
- (D) \_\_\_\_\_: tube-like structures that form flagella
- (E) \_\_\_\_\_: photorespiration occurs here
- (F) \_\_\_\_\_: the layer cementing together of adjacent plant cells
- (G) \_\_\_\_\_: involving cytoplasmic streaming
- (H) \_\_\_\_\_: double-membrane system that manufactures proteins
- (I) \_\_\_\_\_: inner membranes of mitochondria
- (J) \_\_\_\_\_: minute strands of cytoplasm that extend between adjacent cells through pores in the walls

