國立成功大學

111學年度碩士班招生考試試題

編　號：62

系　所：熱帶植物與微生物科學研究所

科　目：植物生理學

日　期：0220

節　次：第 1 節

備　註：不可使用計算機

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※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

I. Term explanation (40%, 4% for each; explain as much as you can)

1. Antenna chlorophyll
2. Plasmodesmata
3. Root nodules
4. Shoot apical meristem
5. Photosynthetic active radiation
6. Phloem loading
7. Callus
8. Anthocyanin
9. Lignin
10. Photoperiodism

II. Questions (60%, 5% for each)

1. Do the "**dark reactions**" of photosynthesis require light? Why?
2. Can plants utilize "**organic substances**" directly? Why?
3. Given an example of **plant movements** and explain its mechanism.
4. Why can **CAM** (short for crassulacean acid metabolism) plants adapt to dry climate?
5. Explain "**acid growth hypothesis**" in regulation of cell elongation in response to auxin?
6. **Auxin** and **cytokinin** are hormones often use to regulate organogenesis in plant tissue culture. Please explain the effects of high auxin:cytokinin ratio, low auxin:cytokinin ratio or equal auxin/cytokinin ratio used in the culture media on organogenesis.
7. **ABSCISIC ACID (ABA)** is an important hormone when plants response to drought stress. ABA helps plant to conserve water by closing stomata cells, promote root growth and induce genes to protect cells from desiccation damage. Can you explain how ABA regulates closing of guard cells in response to drought stress?
8. The ratio of ABA:GA controls seed maturation/dormancy or seed germination. Please explain how **GA** plays a role in seed germination.
9. Understand the physiological effects of **ethylene** is important for post-harvest quality of flower (orchid), vegetable (tomato) and fruit (banana) crops, why?
10. Please describe the principle of ***Agrobacterium*** mediated plant transformation.
11. Compare gametophytic and saprophytic **self-incompatibity**.
12. How **phytochrome** controls shade avoidance, why reduction of shade avoidance responses can improve crop yield?