

Total 100 points

A. Explain the terms: (3 points each, total 15 points)

1. Halophytes
2. Circadian rhythm
3. Chemiosmosis
4. Apoplast
5. Senescence

B. Essay: (total 85 points)

1. Please diagram to illustrate the signal transduction pathways lead to systemic acquired resistance involved in plant defense responses against pathogens. (15 points)
2. Transition to flowering involved multiple factors and pathways. What are the four main distinct developmental pathways that control flowering in the long-day plant Arabidopsis, and how? (15 points)
3. Because of the global warming, some scientists want to transform the C3 plant rice into a C4 plant to increase the yield in hot and dry climates. What are the advantages? What are the difficulties encountered? (15 points)
4. Some biocontrol agents may also promote plant growth and even increase the tolerance to abiotic stresses. Suggest some parameters or indications for scientists to exam the abiotic stress tolerance, and why? (20 points)
5. Please write a brief pathway of plant respiration including the three major parts and show how the substrates and products could regulate the respiration. (20 points)