

Total 100 points

A. Explain the terms: (5 points each, total 15 points)

1. Hydroponic culture
2. Photorespiration
3. Abiotic stress

B. Assay: (total 85 points)

1. Please diagram to show the radial paths of ion movement through a root (from the soil to the vascular tissues). (10 points)
2. Please diagram to show the organization of the photosynthetic electron transport system in the thylakoid membrane. (20 points)
3. Please explain the acid-growth hypothesis for cell enlargement and the involvement of auxin. (15 points)
4. Please explain the involvement of jasmonic acid in plant defense responses to biotic stresses. (10 points)
5. What is the "triple response" of etiolated dicot seedlings caused by ethylene? What is the pathway of ethylene biosynthesis (starting from a specific amino acid) in higher plants? (15 points)
6. Please explain why C4 plants are adapted to high temperature and drought? (15 points)