

OLLSCOIL NA hÉIREANN  
NATIONAL UNIVERSITY OF IRELAND, GALWAY

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**SUMMER EXAMINATIONS, 2002**

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**B.Sc. DEGREE (HONOURS)**

**BOTANY**

*Second Paper*

Professor M.J. Dring  
Professor M.D. Guiry  
Professor M. O'Connell  
Dr D. Stengel

Time allowed: *Three* hours.

Answer *three* questions, at least *one* from each Section.

**SECTION A**

1. How many primary endosymbioses of plastids have occurred in the evolution of modern algal groups? What evidence supports this theory?
2. What are the criteria for recognising introduced species. How have molecular techniques been used to recognize them, to identify their origin and to determine their spread?

**OR**

How useful are marine algae as direct or indirect indicator species for water quality? Describe the characteristics required for such indicator species.

3. Describe the typical physiological responses of marine algae to light stress, including photosynthetic and pigment adaptations/acclimations to both high and low irradiances.

**SECTION B**

4. "Interglacial cycles provide important insights into long-term dynamics in woodland composition". Discuss this statement.
5. "Environmental change during the Late-glacial period in Ireland was both rapid and pronounced." Review the evidence that supports this statement and consider the factors responsible for the environmental changes you describe.
6. Critically discuss the Elm Decline and Neolithic Landnam as key events in Holocene pollen records from Ireland.