GX 260

NATIONAL UNIVERSITY OF IRELAND, GALWAY

Ollscoil na hEireann, Gaillimh

Second Science Examination

2001-2002

Semester I, Autumn

BIOCHEMISTRY 'Biomolecules in the cell' (BI211)

External Examiner: Dr. D. Apps

Time allowed: Three Hours

INSTRUCTIONS:

SECTION A (20 marks)

Answer all questions.

Write answers on examination paper.

SECTION B

Answer 4 questions.

Write answers in answer books.

(20 marks per answer.)

SECTION B

Answer 4 questions.

1. List the **five** general types of chemical transformations that occur in cells. Explain, with the aid of diagrams, the mechanism and function of each type of transformation.

2. 'Water is central to biochemistry'. Using diagrams, outline the physical and chemical properties of water and explain how these properties influence the structure of macromolecules.

3. Compare and contrast fibrous and globular proteins.

4. Explain the process of DNA replication, illustrating how accuracy is achieved.

5. Describe the structure and functions of mRNA, tRNA and rRNA.

6. Using diagrams, describe the structure of the principal classes of storage and membrane lipids.

7. Outline the importance of structural and storage polysaccharides in eukaryotic lifeforms, and give some examples of both categories of polysaccharide.

8. Describe the mechanism of action of chymotrypsin.