

OLLSCOIL NA hEIREANN, GAILLIMH

NATIONAL UNIVERSITY OF IRELAND, GALWAY

SPRING EXAMINATIONS 2001  
FIRST YEAR DIPLOMA IN NURSING EXAMINATION(Repeat)

BIOLOGICAL SCIENCES

BIOCHEMISTRY/NUTRITION/GENETICS (NU189)  
(TOTAL MARKS 120)

Prof. R.J.Mayer  
Prof. John Smith  
Prof. J.A. Houghton  
Dr. M.P. Carty  
Ms. G. Nolan

**Time allowed: One and a half hours**

**Use a separate answer book for each section i.e. Biochemistry, Nutrition and Genetics. You are expected to answer *Two* questions from Biochemistry, *Two* questions from Nutrition and *One* Question from Genetics. Each question carries equal marks (20% each).**

**SECTION ONE**  
**(Answer both questions)**  
**BIOCHEMISTRY**

**Question One**

**Answer five of the short questions below, confining your answers to *less than ten lines, or to less than five lines if you also draw a diagram.***

1. Outline the major differences between prokaryotic and eukaryotic cells. Give an example of each type of cell.
2. Explain the term genetic disease, and give two examples.
3. Explain the term biomolecule. Name the four main classes of biomolecules.
4. What are the major chemical elements found in biomolecules?
5. Name two important lipids, and explain the role of each one.
6. Give an example of a monosaccharide and a polysaccharide. In what form is carbohydrate stored in a) the liver and b) plants?
7. Proteins are polymers of which kind of monomer? Give an example of a) a structural protein and b) an enzyme.
8. Explain the two main pathways by which energy is derived from glucose in the cell. Where in the cell does each pathway occur?
9. What is the major energy-carrying molecule in the cell, and what type of chemical bond is found in this molecule?
10. Outline why glucose is an important energy source.

### **Question Two**

**Answer four of the short questions below, confining your answers to *less than ten lines, or to less than five lines if you also draw a diagram.***

1. Describe the major differences between the structures of DNA and RNA.
2. In what form is genetic information stored in the cell?
3. Give two examples of the importance of specific base-pairing.
4. Outline the 'flow of genetic information'.
5. What word is used to describe a) RNA synthesis and b) protein synthesis.  
Outline the process of RNA synthesis briefly.
6. Name three different types of ribonucleic acid (RNA).
7. Where does protein synthesis occur in the cell? Outline the process briefly.
8. List two ways in which proteins can be modified after synthesis, and outline the importance of these modifications.

## **SECTION TWO** **(Answer both questions)** **NUTRITION**

### **Question One**

Write an account of dietary treatment of obesity

**OR**

An account of dietary treatment of constipation.

### **Question Two**

Write notes on **THREE** of the following:

- (a) Protein
- (b) Fat
- (c) Iron
- (d) Calcium
- (e) Vitamin C
- (f) Carbohydrates

## **SECTION THREE** **(Answer One Question)** **GENETICS**

### **Question One**

**Answer Either:**

- (a) Write an essay on the "The Inheritance of Genetic Disorders caused by Recessive Alleles".

**Or**

- (b) Write an essay on "Chromosome Abnormality in Man".