

NATIONAL UNIVERSITY OF IRELAND, GALWAY.
Ollscoil na hEireann, Gaillimh.

Summer Examinations, 2002.

Second Medical Examination
BIOCHEMISTRY (BI 202)

External Examiner: Dr. Iain Mowbray

Time allowed: Three hours

Please attempt **five** of the following:

1. Outline the physical and chemical properties of water. Explain with the aid of diagrams how the bicarbonate blood buffering system works.
2. Giving examples, compare and contrast the structures and functions of fibrous and globular proteins.
3. Outline the process of translation (protein synthesis) in cells, with particular reference to the roles of mRNA, tRNA and rRNA.
4. Give an account of oxidative phosphorylation and describe the role of the mitochondrion in the process.
5. Describe three mechanisms by which molecules are transported across the plasma membranes of animal cells.
or
Outline the oxidation of fatty acids and discuss the importance to human beings of the process in the generation of ketone bodies.
6. Giving examples, describe the main structural and biochemical properties of oligosaccharides and polysaccharides, and outline their importance in biotechnology and in the medical sciences.
or
Outline the reactions of glycogen breakdown and synthesis and discuss the regulation of these processes in either liver or muscle.
7. Describe the process of amino acid degradation in the liver, with emphasis on transamination reactions and the fate of carbon skeletons.
8. Describe the polymerase chain reaction and give examples of how it may be used in the diagnosis of disease.