

**CORK INSTITUTE OF TECHNOLOGY  
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Autumn 2013 – continuous assessment module**

**Module Title: Human Anatomy and Physiology**

**Module Code:** PHOL6006

**School:** Science

**Programme Title(s):** BSc (Honours) in Herbal Science  
BSc (Honours) in Nutrition and Health Science  
BSc (Honours) in Pharmaceutical Biotechnology  
BSc in Applied Biosciences

**Programmes Code(s):** CR\_SHNSC\_8\_Y1  
CR\_SHERB\_8\_Y1  
CR\_SPHBI\_8\_Y1  
CR\_SBIOS\_7\_Y1

**External Examiner(s):** Dr. Julia Green

**Internal Examiner:** Dr. Fiona O' Halloran  
Ms. Ruth Keary

**Instructions:** Answer question 1 and any THREE other questions

**Duration:** 2 hours

**Sitting:** Autumn 2013

**Requirements for this examination:** Scientific calculator

**Note to Candidates:** Please check the Programme Title and the Module Title to ensure that you have received the correct examination. If in doubt please contact an Invigilator.

**Q 1 (compulsory). Answer all parts, all parts carry equal marks.**

- (a) Why are control samples important in laboratory experiments
- (b) Name a reagent that can be used to test for the presence of maltose
- (c) In the presence of starch what colour is iodine solution?
- (d) Draw a simple labelled diagram of a nephron and indicate where the process of filtration occurs.
- (e) List four types of white blood cells
- (f) Name the main blood group antigen system.
- (g) When an antigen and its corresponding antibody react a specific type of reaction occurs. Name this reaction.
- (h) Name two hormones that help to regulate blood glucose levels
- (i) In an experiment to measure blood glucose levels in two patients the following absorbance values were obtained. Using the data given below determine the concentration of glucose in each patient sample

Table 1

<u>Test Sample</u>	<u>Absorbance @340nm</u>
Patient 1	0.45
Patient 2	0.35
Glucose standard	0.60

Glucose standard concentration = 5.5 mmol/l

- (j) What is meant by 'basal metabolic rate'?

(40 Marks)

**Q2**

- (a) Describe the structure and function of the four layers of tissue in the wall of the gastrointestinal tract (GI)  
(8 Marks)
- (b) Proteins are digested both mechanically and chemically in the GI tract. Differentiate between these two types of digestion mechanisms and describe how proteins are converted to amino acids by these processes.  
(12 Marks)

**Q3**

- (a) Using diagrams describe the difference between a blood artery and a blood vein  
(6 Marks)
- (b) Blood is composed of a liquid fraction and a cellular fraction. Describe what each fraction is composed of and list three significant functions of each fraction  
(14 Marks)

**Q4**

- (a) What is a neuron? Differentiate between three types of neurons.  
(8 Marks)
- (b) Using a diagram, explain what is meant by the term 'action potential'  
(12 Marks)

**Q5**

The menstrual cycle can be described by changes that occur in the ovarian cycle and the uterine cycle. Write an essay describing the structural and hormonal events that occur in these two cycles.  
(20 Marks)