

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Autumn Examinations 2014

Module Title: Human Anatomy and Physiology (CA)

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): SHNSC_8_Y1
SHERB_8_Y1
SPHBI_8_Y1
SBIOS_7_Y1

External Examiner(s): Prof. Olivia Corcoran

Internal Examiner: Dr. Fiona O' Halloran

Instructions: Answer question 1 and any THREE other questions

Duration: 2 hours

Sitting: Autumn 2014

Requirements for this examination:

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) Differentiate, giving an example in each case, between chemical and mechanical digestion processes.
- (b) Based on the data provided in Table 1 explain the colour changes observed (or not) in each reaction tube.

Table 1: Experimental data on starch digestion

Tube No.	Contents	Test for	Reagent used	Colour change observed
1	Water, 0.1% starch	Starch	Iodine (brown)	No change observed
2	0.1% starch, 0.1% amylase	Starch	Iodine (brown)	Brown to dark blue
3	0.1% starch, 0.1% amylase, 1M HCl	Starch	Iodine (brown)	No change observed
4	Water, 0.1% starch,	Sugars	Benedicts (blue)	No change observed
5	0.1% starch, 0.1% amylase	Sugars	Benedicts (blue)	Blue to red

- (c) Briefly explain why control samples are important in laboratory experiments.
- (d) Name two hormones produced by the pancreas and give the function of each hormone.
- (e) In an experiment to measure blood glucose levels in a patient the control glucose sample was determined to be 3.51mmol/l. Given that the control reference range is 5.19 - 7.03mmol/l, comment on the significance of this result.
- (f) Name two clinically important blood group antigen systems.
- (g) Name a substance that is normally found in blood but NOT normally found in urine. Briefly describe a condition that causes this substance to be detected in the urine.
- (h) Define the term 'basal metabolic rate'.

(40 Marks/5 marks each)

Q2

- (a) Name five primary endocrine organs. 5 marks
- (b) List two functions of the hormone thyroxine. 5 marks
- (c) Describe, using a diagram, how calcium levels are regulated in the blood. 10 marks

Q3

- (a) Describe how the body digests carbohydrates. 10 marks
- (b) Name three digestive hormones and describe their functions. 6 marks
- (c) List two functions of the large intestine? 4 marks

Q4

- (a) Using a diagram, describe the filtration, reabsorption and secretion processes that occur in a kidney nephron. 15 Marks
- (b) Name two hormones produced by the kidney and describe their functions. 5 Marks

Q5

‘Human blood is made up of a cellular fraction and a liquid fraction that support all of its essential functions’. Discuss this statement by describing the major components of blood and indicating their essential functions.

20 marks