MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE PHARMACEUTICAL SCIENCES MEDICAL LABORATORY SCIENCE WITH INFORMATION TECHNOLOGY

(MAIN CAMPUS)

PMT 122: HUMAN PHYSIOLOGY I

Date: 15th July 2014 *Time:* 2.30 – 4.30 pm

INSTRUCTIONS:

- This paper consists of two sections
- Section A consists of SAQs and carries 30 marks; ANSWER ALL
- Section B. consists of LAQs and carries 30 marks: ANSWER ANY TWO QUESTION 1 IS COMPULSORY.

End of semester 2 Exams 2013/2014

Degree of Bachelor of Science in Medical Biotechnology, Pharmaceutical Sciences and Medical Laboratory Science with IT

Main Campus

PMT 122 HUMAN PHYSIOLOGY I

SECTION A (30 marks): Answer ALL questions in this section.

1. The grid below contains possible blood groups that individual **X** and **Y** can have. If an initial transfusion is done to subject **Y** using blood donated from subject **X**, denote within the grid using YES where blood groups will match and using NO where blood groups do not match? (4 MARKS)

		Subject **Y**			
		A Rh+	B Rh-	AB Rh+	O Rh-
Subject **X**	A Rh-				
	B Rh+				
	AB Rh-				
	O Rh+				

Rh—rhesus factor

2. Define osmosis from the perspective of ; a) concetrations of a solution b) concentration of water molecules (4 MARKS)
3. State the principles of cell theory (4 MARKS)
4. Outline the similarities and differences between **lysosomes** and **peroxisomes** (4 MARKS)

5. a). distinguish between these features of membrane transport; **membrane carrier molecules, primary transporters, secondary transporters** and **channels**

   b). what is the importance of compartmentalization of cellular features within organelles (4 MARKS)

6. State similarities and differences between **endocytosis** and **exocytosis** (4 MARKS)
7. Define the following terms; a)feedback homeostatic regulation ; b) feed forward homeostatic regulation (4 MARKS)
8. In any solution the concentration of water molecules is usually inversely proportional to the concentration of solute; explain? (4 MARKS)
9. State which two principles of Fick's law of diffusion are satisfied by the structure of a red blood cell and outline how these principles influence the rate of diffusion (4 MARKS)
10. In a set up, **solution A** with a lower concentration of **non-penetrating solute** is separated by a rigid selectively permeable barrier from solution B having a higher concentration of the same non penetrating solute; (4 MARKS)

a) State the factors that will influence osmosis in this arrangement

b) Explain the relationship between these factors and the direction and rate of osmotic events

c) Explain the impact of these factors on establishment of equilibrium point

SECTION B (30 marks): Answer ANY TWO questions in this section. Question 1 is compulsory

1. Discuss how energy in the form of ATP is derived from a single glucose molecule by the process of cellular respiration within living cells. (15 marks)
2. Discuss hemostasis (15 marks)
3. Discus events in a completed cardiac cycle from the perspective of the ventricles (15 marks)