



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2016/2017**

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

**MAIN CAMPUS**

**PML 212: CLINICAL PHYSIOLOGY**

Date: 29<sup>th</sup> November, 2016

Time: 3.30 - 6.30 pm

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**INSTRUCTIONS:**

- Answer ALL questions in SECTION A and TWO questions in SECTION B.



PML 212: CLINICAL PHYSIOLOGY SEMESTER ONE YEAR II

BSC MEDICAL LABORATORY SCIENCES

SECTION A: Answer all questions

1. Define the following giving the values in different gender groups (4 Marks)
  - a. Renal blood flow
  - b. Renal plasma flow
  - c. Glomerular filtration rate
2. Explain the term anion gap and give its physiological range? (4 Marks )
3. State the forces responsible for systemic capillary net filtration pressure and glomerular capillary net ultra filtration pressure and outline their differences? (4 Marks)
4. Differentiate between osmolarity and Osmolality (4marks)
5. State and explain the processes that contribute to urine formation in the kidney nephron (4 Marks)
6. State and explain the number of osmoles yielded by
  - a. Dissolving one mole of  $\text{Na HCO}_3$  in one liter of water
  - b. Dissolving two moles of  $\text{Ca [HCO}_3\text{]}_2$  in one liter of water (4marks)
7. Define the term osmotic fragility of Red blood cells and give its normal range ? (4 marks)
8. Define and give the values by gender of the following full hemogram parameters (4Marks)
  - a) Hemoglobin
  - b) Hematocrit
  - c) Mean corpuscular volume (MCV)
  - d) Mean corpuscular hemoglobin (MCH)
  - e) Mean corpuscular hemoglobin concentration (MCHC)
  - f) Red cell distribution width (RDW)
  - g) platelet count
  - h) White cell count
9. Define the following giving their physiological values (4 Marks)

- a. Functional residual capacity
- b. Inspiratory capacity
- c. Vital capacity
- d. Total lung capacity

		K			
H		ARH+	B RH +	AB RH+	O RH+
	A RH-				
	B RH-				
	AB RH-				
	O RH-				

10. Indicate by yes or NO where there will be compatibility when H is a second time recipient from K

**SECTION B. Answer question one (compulsory) and OTHER TWO questions**

- 11.(a) Describe the plasma clearance of a substance X of in a healthy male when
- a. All the substance X filtered is excreted in urine
  - b. After filtration none is reabsorbed but 50% of remnants of X in peritubular capillaries are secreted
  - c. Half of filtered substance is reabsorbed back without accompanying secretion
- (b) How is a substance whose plasma clearance is equivalent to renal plasma flow handled by the three functional processes of the nephron (10 marks)
12. Discuss physiological mechanisms which regulate body fluids balance?
13. Discuss the nature and functions of components of blood plasma (20 Marks)