



“Investing in Africa’s future”

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES

NSNS324 : HUMAN PHYSIOLOGY

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2022

LECTURER: Dr. S Chituku

DURATION: 3 HRS

INSTRUCTIONS

You are required to answer questions as instructed below

Answer any **four (4)** questions in this paper

Credit will be awarded for logical, systematic and neat presentations

Question 1

- a) At least one kidney must function effectively for proper body maintenance.
- i) Identify five important roles of the kidneys. **[5]**
 - ii) Describe the formation of urine. **[15]**
 - iii) The kidneys have an important endocrine function known as the Renin-angiotensin-aldosterone system. Describe this system. **[5]**

Question 2

- i) Of all the major endocrine organs, explain why the hypothalamus is the “master gland”. **[10]**
- ii) Analyse the release and significance of the growth hormone and antidiuretic hormone. **[10]**
- iii) Explain the role played by the hormones released by the adrenal gland. **[5]**

Question 3

- a) Lung volumes are determined by interaction of lungs and chest wall, with changes in the volumes indicating presence of lung disease.
- i) With reference to four major lung volumes, describe the significance of assessment of these. **[10]**
 - ii) Lung compliance is important when considering lung volumes. With reference to a definition of lung compliance, analyse its determinants. **[5]**
 - iii) The depth and rate of breathing is under control by numerous elements. Discuss the various elements regulating breathing. **[10]**

Question 4

- a) The cell is a fundamental functional unit of the human body.
- i) Considering its delicate structure, outline the functions of the cell membrane. **[5]**
 - ii) Describe the role of the microtubules and mitochondria in the cell. **[15]**
 - iii) Cell respiration begins with glycolysis. Describe this process, highlighting its products. **[5]**

Question 5

- b) The lymphatic system is closely tied to the immune system.

- i) Describe the functions of the lymphatic system. **[5]**
 - ii) Identify key lymphocytes and outline their significance in body defence mechanism. **[10]**
 - iii) With reference to two examples, narrate the effects of a low white cell count on a 4 year old child. **[5]**
- c) The cell is a fundamental functional unit of the human body.
- iv) Considering its delicate structure, outline the functions of the cell membrane. **[5]**

End of Paper