



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (PUBLIC HEALTH)

HPH 101: HUMAN ANATOMY AND PHYSIOLOGY I

DATE: 21/6/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

This paper consists of two sections A and B

SECTION A

Specific Instructions

- This section has one question
- The question is compulsory
- The question is 30 marks

QUESTION ONE (30 MARKS)

- Outline the main elements comprising the human body and their roles (3 marks)
- Draw a well labeled diagram of the functional unit of the nervous system. (3 marks)
- Outline the composition of body fluids in their compartment. (3 marks)
- Explain the constituents of the appendicular skeleton. (3 marks)
- Outline with reasons the dominant organelles in the parenchymal cells of the following organs to optimize their functions: (3 marks)
 - Liver
 - Kidneys
 - Lymphoid organs

- f) Describe the membranes found in the human body (3 marks)
- g) Illustrate the flow of blood through the heart (5 marks)
- h) Explain the factors affecting the process of erythropoiesis (3 marks)
- i) Outline the organization of the nervous system (4 marks)

SECTION B:

Specific Instructions

- **This section has four (4) questions**
- **Answer any two (2) questions**
- **Each question is 20 marks**

QUESTION TWO (20 MARKS)

- a) You walk along a crowded street, an old friend lightly strokes your external ear using a feather and you quickly turn to his direction with a stern look. Describe the physiology of the body system that enabled you to respond this way. (10 marks)
- b) The skeletal system forms crucial cavities in the human body that play vital roles. Describe these cavities, structures contained in it and their functions (10 marks)

QUESTION THREE (20 MARKS)

- a) Hyperventilation and hemostasis are homeostatic responses aimed at maintaining body functions. Explain the control systems involved in these responses (10 marks)
- b) Covid-19 infection presents with symptoms affecting special senses. Describe the physiology of the affected special senses in covid-19 infection. (10 marks)

QUESTION FOUR (20 MARKS)

- a) A family comprising of a 3 year old, his parents and an 80 year old grandpa is involved in a road traffic accident. They all sustain multiple fractures and are treated. Discuss the possible outcomes of treatment in each member and the process involved in healing of the fractures. (10 marks)
- b) Stating the law of conservation of energy, explain with relevant examples the types of chemical reactions occurring in the human body. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Patient X has completed 3 cycles of chemotherapy and as soon as radiotherapy was initiated, she lost all hair on her scalp. Describing the stages of hair development, explain this phenomena. (10 marks)
- b) Blood pressure is a critical homeostatic condition that has to be regulated and maintained within a normal range. How does the body achieve this? (10 marks)