



MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES

DEPARTMENT OF HEALTH SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (FOODS, NUTRITION & DIETETICS)

HFN 143: HUMAN ANATOMY AND PHYSIOLOGY I

DATE:

TIME:

INSTRUCTIONS:

This paper consists of two sections A and B

SECTION A

Specific Instructions

- **This section has one question in two parts**
- **The question (all parts) is compulsory**
- **The question is 30 marks**

QUESTION ONE (30 MARKS)

PART I: MULTIPLE CHOICE QUESTIONS (10 MARKS)

1. The cellular part of the blood is made up of:
 - a) Erythrocytes, neutrophils, thrombocytes
 - b) Leukocytes, basophils, thrombocytes
 - c) Thrombocytes, leukocytes, erythrocytes
 - d) Basophils, eosinophils, thrombocytes.

2. The air we breathe in has:
 - a) 18% oxygen
 - b) 16% oxygen
 - c) 21% oxygen
 - d) 12% oxygen

3. The layer of the heart that is thin, smooth, glistening and permits smooth flow of blood inside the heart is called:
 - a) Myocardium.
 - b) Endocardium.
 - c) Pericardium.
 - d) Epicardium.

4. The following are the functions of the spleen except:
 - a) Immune response.
 - b) Storage of blood.
 - c) Erythropoiesis.
 - d) Absorption of fat and fat soluble materials.

5. The following are some parts found in the inner ear:
 - a) Oval window and round window.
 - b) Bony labyrinth and membranous labyrinth.
 - c) Fibro elastic cartilage and cochlea.
 - d) Tympanic membrane and perilymph

6. The following nutrients are required for maturation of Red Blood Cells
 - a) Vitamin C and Folic acid
 - b) Folic acid and Vitamin B12
 - c) Vitamin B2 and Vitamin B12
 - d) Iron and Vitamin C

7. Predominant red blood cells in circulation following acute blood loss is:
 - a) Erythroblast
 - b) Reticulocyte
 - c) Normoblast
 - d) Normocyte

8. Kupffer cells are fixed macrophages of:
 - a) Liver
 - b) Kidney
 - c) Brain
 - d) Skin

9. Mr. D blood group O +ve donates blood to his son of blood group B during a surgical emergency. Unfortunately a reaction ensues and transfusion is stopped immediately. The reaction was possibly due to:
- ABO incompatibility
 - Rhesus incompatibility
 - Both ABO and Rhesus incompatibility
 - It is impossible for the reaction to have occurred, something else caused it
10. Racial variation in skin color occurs due to:
- Varying number of melanocytes
 - Varying quantity of melanin produced
 - Both a and b
 - None of the above

PART II: SHORT ANSWER QUESTIONS (20 MARKS)

- Explain the adaptation of the involved blood vessels for peripheral resistance. (4 marks)
- Justify the chest compressions position in CPR in relation to the heart's gross anatomy. (5 marks)
- Draw a well labeled diagram showing the direction of flow of cerebrospinal fluid. (5 marks)
- State factors affecting bone growth and development (3 marks)
- Explain the constituents of the axial skeleton (3 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)

The largest organ in the human body seemingly not so important organ yet its absence is fatal. Discuss.

QUESTION THREE (20 MARKS)

- Normal process of parturition causes no harm to the baby yet a term baby's head is relatively bigger than the birth canal. Describe the bones of the skull and their adaptation to this process. (10 marks)
- 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) Describe the cardiac cycle (10 marks)
- b) A barbed wire slits Mr. J's hand out in the fields. He cleans it and stops the bleeding and goes about his business. Two days later he cannot lift the affected arm due to swelling and severe pain in his axillary region. Describe this phenomenon and the roles of other organs in the affected organ system. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the cranial nerves (12 marks)
- b) Describe the internal environment and its role in maintenance of homeostatic balance. (8 marks)