



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR
SECOND YEAR SECOND TRIMESTER**

**SCHOOL OF PURE, APPLIED AND HEALTH
SCIENCES
DIPLOMA IN FOOD, NUTRITION AND DIETETICS**

**COURSE CODE: DND 2202
COURSE TITLE: HUMAN ANATOMY AND
PHYSIOLOGY II**

DATE: 15TH APRIL 2024

TIME: 0830-1030

INSTRUCTION TO CANDIDATES

Section A: Multiple Choice Questions. Answer ALL Questions

Section B: Short Answer Questions. Answer ALL Questions

Section C: Long Answer Questions. Answer Question ONE and any other ONE question.

This paper consists of 6 printed pages. Please turn over.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS) SELECT THE CORRECT ANSWER.

- 1) Which of the following tissues is responsible for producing movement through its ability to contract?
 - A. Epithelial tissue
 - B. Connective tissue
 - C. Muscle tissue
 - D. Nerve tissue
- 2) The smallest independent unit of life in the human body is:
 - A. Atom
 - B. Molecule
 - C. Cell
 - D. Tissue
- 3) Which gland is associated with the immune system and produces thymosin to activate T-cells?
 - A. Pancreas
 - B. Thyroid
 - C. Thymus
 - D. Adrenal
- 4) How do sperm cells differ from other cells in the male body?
 - A. they contain 23 chromosomes
 - B. they all contain an X chromosome
 - C. they all contain a Y chromosome
 - D. they undergo mitosis
- 5) Which of the following terms best describes a position farther from the point of attachment or the trunk of the body?
 - A. Proximal
 - B. Distal
 - C. Medial
 - D. Lateral
- 6) The plane that divides the body into an anterior and posterior portion is called:
 - A. Sagittal plane
 - B. Frontal plane
 - C. Transverse plane
 - D. Midsagittal plane
- 7) Where is mucous (Wharton's Jelly) connective tissue primarily found?

- A. In the adult connective tissue
 - B. In the umbilical cord of the fetus
 - C. In the vocal cords
 - D. In the intervertebral discs
- 8) Which disease involves the enlargement of lymph nodes and is commonly caused by infection, inflammation, or cancer?
- A. Lymphangiomatosis
 - B. Lymphoma
 - C. Lymphadenopathy
 - D. Lymphedema
- 9) Which arteriole carries blood away from the Bowman's capsule in the nephron?
- A. Afferent arteriole
 - B. Efferent arteriole
 - C. Renal arteriole
 - D. Capillary arteriole
- 10) Which lymphoid organ is found in the abdominal cavity behind the stomach and filters blood?
- A. Thymus
 - B. Lymph nodes
 - C. Spleen
 - D. Bone marrow
- 11) The posterior body cavity that houses the brain and spinal cord is known as:
- A. Vertebral cavity
 - B. Cranial cavity
 - C. Abdominal cavity
 - D. Thoracic cavity
- 12) Which of the following is the function of the vascular tissue (blood)?
- A. Supports organs
 - B. Provides strength and elasticity
 - C. Oxygen transport
 - D. Stores fat
- 13) Which list contains the main body tissue types
- A. Glandular, connective, osseous, nervous
 - B. Epithelial, nervous, connective, muscle.

- C. Endothelial, connective, muscle, cartilaginous
 - D. Epithelial, cartilaginous, muscle, glandular
- 14) What is the difference between an exocrine gland and an endocrine gland?
- A. An endocrine gland secretes neurotransmitters (an exocrine gland does not).
 - B. An endocrine gland secretes via a tube to the destination (an exocrine gland does not).
 - C. An exocrine gland secretes into the blood (an endocrine gland does not).
 - D. An endocrine gland secretes into the blood (an exocrine gland does not)
- 15) Which of the following is an example of an exocrine gland?
- A. Thyroid gland
 - B. Adrenal gland
 - C. Sweat gland
 - D. Pineal gland
- 16) Which layer of supportive tissue surrounds the kidneys and anchors them to surrounding structures?
- A. Renal capsule
 - B. Perirenal fat capsule
 - C. Renal fascia
 - D. Fibrous capsule
- 17) The primary structural unit responsible for forming urine in the kidney is:
- A. Renal pelvis
 - B. Glomerulus
 - C. Nephron
 - D. Bowman's capsule
- 18) Which gland in the male reproductive system produces a milky, alkaline fluid to increase sperm motility?
- A. Seminal vesicles
 - B. Prostate gland
 - C. Bulbourethral glands
 - D. Vas deferens
- 19) The human body's ability to maintain a relatively constant internal temperature is an example of what?
- A. Respiratory heat loss

- B. Homeostasis
 - C. Vasodilation and evaporative heat loss
 - D. Positive feedback
- 20) A student is observing cells in the laboratory and notices a double-layered membrane surrounding the cell contents, controlling what gets in and out of the cell. What part of the cell is the student observing?
- A. Nucleus
 - B. Cytoplasm
 - C. Plasma membrane
 - D. Endoplasmic reticulum

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS). ANSWER ALL QUESTIONS.

- 1) As a human anatomy and physiology student, explain the levels of organization in the human body to a classmate who missed the lecture, starting from the smallest to the largest structure. (6 Marks)
- 2) A fitness enthusiast is seeking guidance on maintaining stable blood sugar levels. How would you, as a nutritionist, explain the roles of insulin and glucagon produced by the pancreas in regulating glucose levels (6 Marks)
- 3) State five essential processes and systems controlled by the endocrine system (5 Marks)
- 4) Discuss the three categories of covering and lining epithelium based on
 - i. Arrangement of cell layers (6 Marks)
 - ii. Cell shape (6 Marks)
- 5) State five key components involved in a homeostatic control system (5 Marks)
- 6) Describe the following diseases of the endocrine system (6 Marks)
 - a) Hypothyroidism
 - b) Hyperthyroidism
 - c) Type 1 Diabetes

SECTION C: LONG ANSWER QUESTIONS (40 MARKS).QUESTION ONE IS COMPULSORY, THEN CHOOSE EITHER QUESTION 2 OR 3.

- 1) Using a simple sketch drawing (where necessary) describe:
 - a) The following positional terms (6 Marks)

- i. Prone
- ii. Proximal
- iii. Superior
- iv. Ventral
- v. Superficial
- vi. Medial

b) Main body cavities and their subdivisions (8 Marks)

c) The three planes of the body (6 Marks)

2) A patient at a specific hospital in Kenya is experiencing pain in the ventral cavity.

a) Explain three potential medical conditions that could be causing the patient's discomfort (6 Marks)

b) Discuss five roles that the kidneys perform in the human body (10 Marks)

c) State four functions of the female reproductive system (4 Marks)

3) The kidney plays a crucial role in regulating calcium ion levels through the interplay of calcitriol and parathyroid hormone (PTH). This hormonal interaction ensures the maintenance of calcium homeostasis in the bloodstream. Dysfunction in this regulatory mechanism can lead to conditions such as hypocalcemia or hypercalcemia, with potential complications affecting bone health

a) Discuss the interplay between calcitriol and parathyroid hormone (PTH) in regulating calcium ion levels in the bloodstream (5 Marks)

b) Describe how the kidneys respond to elevated blood pressure and low blood pressure (5 Marks)

c) Explain three structural adaptations of the Bowman's capsule and the glomerulus that contribute to their efficient functioning in the process of filtration. (6 Marks)

d) Describe two hormones responsible in regulating reabsorption within the renal system (4 Marks)