

**CANDIDATE NUMBER.....**



**AFRICA  
UNIVERSITY**  
*A United Methodist-Related Institution*

*“Investing in Africa’s Future”*

**COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES**

**DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES**

**BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE**

**MLS1104: HUMAN PHYSIOLOGY**

**END OF SEMESTER FINAL EXAMINATIONS**

**NOVEMBER 2025**

**LECTURER: PROF MAIBOUGE SALISSOU**

**INSTRUCTIONS**

- 1. Write your candidate number on the space provided on top of each page**
- 2. Answer all questions in sections A on the question paper.**
- 3. Answer all questions in section B on separate answer sheets provided.**
- 4. Answer any 3 questions in section C on separate answer sheets provided**
- 5. The mark allocation for each question is indicated at the end of the question**
- 6. Credit will be given for logical, systematic and neat presentations in sections B and C**

**SECTION A : MULTIPLE CHOICE [ 40MARKS ]**

- Answer all questions by indicating the correct response by T for TRUE or F for FALSE for each statement in all the questions**
- Each correct response is allocated half mark and each question carry 2 marks**

**SECTION A: MULTIPLE CHOICE [40 MARKS]**

- **Answer all questions by indicating the correct response using a T for TRUE or F for FALSE for each statement in all the questions**
- **Each question carries 2 marks**

**Question 1: Negative-feedback mechanisms**

- a. Make deviations from the set point smaller.
- b. Maintain homeostasis.
- c. Are associated with an increased sense of hunger the longer a person goes without eating.
- d. All of the above.

**Question 2: The following are functions of the proteins found in the plasma membrane**

- a. channel proteins
- b. marker molecules
- c. receptor molecules
- d. enzymes

**Question 3. Integrins in the plasma membrane function as**

- a. channel proteins.
- b. marker molecules.
- c. attachment proteins
- d. enzymes.

**Question 4. Concerning the process of diffusion, at equilibrium state**

- a. the net movement of solutes stops.
- b. random molecular motion continues.
- c. there is an equal movement of solute in opposite directions.
- d. the concentration of solute is equal throughout the solution.

**Question 5: The following are major functional characteristic of muscle**

- a. contractility
- b. elasticity
- c. excitability
- d. extensibility

**Question 6: The connective tissue sheath that surrounds a muscle fasciculus is/are**

- a. perimysium.
- b. endomysium.
- c. epimysium
- d. hypomysium.

**Question 7: During the depolarization phase of an action potential, the permeability of the plasma membrane to**

- a.  $\text{Ca}^{2+}$  increases.
- b. K increases. .
- c.  $\text{Ca}^{2+}$  decreases
- d.  $\text{Na}^+$  increases.

**Question 8: The following is/ are function of the hypothalamus**

- a. regulates autonomic nervous system functions
- b. regulates the release of hormones from the posterior pituitary
- c. regulates body temperature
- d. regulates food intake

**Question 9: Insulin increases**

- a. the uptake of glucose by its target tissues.
- b. the breakdown of protein.
- c. the breakdown of fats.
- d. glycogen breakdown in the liver.

**Question 10: The following tissues is /are least affected by insulin**

- a. adipose tissue
- b. skeletal muscle
- c. heart
- d. brain

**Question 11: Regarding the Glucagon**

- a. Primarily affects the liver.
- b. Causes glycogen to be stored.
- c. Causes blood glucose levels to decrease.
- d. Decreases fat metabolism.

**Question 12: In response to a decrease in blood pressure,**

- a. ADH secretion increases.
- b. the kidneys decrease urine production.
- c. blood volume increases.
- d. all of the above.

**Question 13: In response to a decrease in blood pressure,**

- a. More fluid than normal enters the tissues (fluid shift mechanism).
- b. Smooth muscles in blood vessels relax (stress-relaxation response).
- c. The kidneys retain more salts and water than normal.
- d. All of the above.

**Question 14: The gallbladder**

- a. produces bile.
- b. stores bile.
- c. contracts and releases bile in response to secretin.
- d. contracts and releases bile in response to sympathetic stimulation.

**Question 15: The function of melanin in the skin is to**

- a. lubricate the skin.
- b. prevent skin infections.
- c. protect the skin from ultraviolet light.
- d. reduce water loss.

**Question16: The prime function of osteoclasts is to**

- a. prevent osteoblasts from forming.
- b. become osteocytes.
- c. break down bone.
- d. secrete calcium salts and collagen fibers.

**Question17: Myosin myofilaments**

- a are attached to the Z disk.
- b. found primarily in the I band.
- c. thinner than actin myofilaments.
- d. absent from the H zone.

**Question18: About the molecular structure of myofilaments**

- a. Tropomyosin has a binding site for  $Ca^{2+}$ .
- b. The head of the myosin molecule binds to an active site on G actin.
- c. ATPase is found on troponin.
- d. Troponin binds to the rodlike portion of myosin.

**Question19: The part of the sarcolemma that invaginates into the interior of the skeletal muscle cells are?**

- a. T tubule system.
- d. terminal cisternae.
- b. sarcoplasmic reticulum.
- c. myofibrils.

**Question20: Hyper secretion of growth hormone**

- a. results in gigantism if it occurs in children.
- b. causes acromegaly in adults.
- c. can lead to severe atherosclerosis
- d Cushing syndrome

**SECTION B: [20 MARKS]**

**Answer all questions on separate answer sheets provided**

**Write short note on the following**

- 1) Regulation arterial blood pressure **[5 marks]**
- 2) Write short essay on electrocardiogram, **[5 marks]**
- 3) Write short note on renin angiotensin aldosterone in regulation of blood pressure **[5 marks]**
- 4) Clotting mechanism **[5 marks]**

**SECTION C: [75 marks]**

**Answer any 3 questions from this section on separate answer sheets provided**

- 1) Discuss the regulatory mechanism of respiration **[25 marks]**
- 2) Discuss the mechanism of gastric juice secretion add note on peptic ulcer **[25 marks]**
- 3) Discuss the conducting system of the heart **[25 marks]**
- 4) Discuss on the Glomerular filtration rate (GFR) add note on diabetes insipidus **[25 marks]**
- 5) Discuss the hormonal control of calcium homeostasis add note on hyperparathyroidism **[25 marks]**

**END**