

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**FIRST YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN HUMAN NUTRITION AND DIETETICS**

**HNDS 0121: HUMAN ANATOMY AND PHYSIOLOGY**

**STREAMS: Y1S2**

**TIME:2 HOURS**

**DAY/DATE: THURSDAY 13/04/2023**

**11.30 A.M. –1.30 P.M.**

**INSTRUCTIONS**

1. Do not write anything on the question paper.
2. Mobile phones and any other reference materials are NOT allowed in the examination room.
3. The paper has three sections. Answer ALL questions in Section I and II and ONLY one question in Section III.
4. All your answers for Section I (MCQs) should be on one page.
5. Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.
6. Write your answers legibly and use your time wisely

**SECTION I: MULTIPLE-CHOICE QUESTIONS**

**[20 Marks]**

1. Smooth muscles differ from skeletal and cardiac muscles in that they \_\_\_\_\_
  - A) lack myofibrils
  - B) are under voluntary control
  - C) Lack myosin
  - D) Lack actin
2. If a thermoreceptor is sensitive to temperature sensations, what would a chemoreceptor be sensitive to?
  - A) Light
  - B) Sound
  - C) Molecules
  - D) Vibration
3. The greatest vein in the body is
  - A) Jugular vein
  - B) Saphenous vein

- C) Femoral vein  
D) Brachial vein
4. The gonads produce what class of hormones?  
A) amine hormones  
B) peptide hormones  
C) steroid hormones  
D) catecholamines
5. Hormones produced by the thymus play a role in the \_\_\_\_\_.  
A) Development of T cells  
B) Preparation of the body for childbirth  
C) Regulation of appetite  
D) Release of hydrochloric acid in the stomach
6. Prothrombin is converted to thrombin during the \_\_\_\_\_.  
A) Intrinsic pathway  
B) Extrinsic pathway  
C) Common pathway  
D) Formation of the platelet plug
7. The production of healthy erythrocytes depends upon the availability of \_\_\_\_\_.  
A) Copper  
B) Zinc  
C) Vitamin B12  
D) Vitamin C
8. The valve that separates the left atrium from the left ventricle is?  
A) Mitral  
B) Tricuspid  
C) Pulmonary  
D) Aortic
9. The chamber that initially receives blood from the systemic circuit is?  
A) Left atrium  
B) Left ventricle  
C) Right atrium  
D) Right ventricle
10. One of these antibodies is found in mucus?  
A) IgM  
B) IgA  
C) IgE  
D) IgD
11. As sperm first reach the oocyte, they will contact the \_\_\_\_\_.  
A) Acrosome  
B) Corona radiata  
C) Sperm-binding receptors  
D) Zona pellucida
12. The primary structure found within the medulla is the:  
A) Loop of Henle  
B) Minor calyces  
C) Portal system  
D) Ureter
13. The right kidney is slightly lower because?

- A) It is displaced by the liver
  - B) It is displaced by the heart
  - C) It is slightly smaller
  - D) It needs protection of the lower ribs
14. Contraction of the external intercostal muscles causes?
- A) The diaphragm to move downward.
  - B) The rib cage to be compressed.
  - C) The thoracic cavity volume to decrease.
  - D) The ribs and sternum to move upward
15. The alveoli are prevented from collapsing by:
- A) Residual volume
  - B) Tidal volume
  - C) Expiratory reserve volume
  - D) Inspiratory reserve volume
16. Parietal cells secrete?
- A) Gastrin
  - B) Hydrochloric acid
  - C) Pepsin
  - D) Pepsinogen
17. One of these statements about the pharynx is true?
- A) It extends from the nasal and oral cavities superiorly to the oesophagus anteriorly.
  - B) The oropharynx is continuous superiorly with the nasopharynx.
  - C) The nasopharynx is involved in digestion.
  - D) The laryngopharynx is composed partially of cartilage.
18. Insensible water loss is water lost via?
- A) Air from the lungs
  - B) Urine
  - C) Excessive sweating
  - D) Vomiting or diarrhoea
19. Bone serves as a mineral reserve for?
- A) Sodium and potassium
  - B) Calcium and phosphate
  - C) Chloride and bicarbonate
  - D) Calcium and bicarbonate

20. The process by which a less specialized cell matures into a more specialized cell is called?

- A. Differentiation
- B. Maturation
- C. Modification
- D. Specialization

**SECTION II: SHORT ANSWER QUESTIONS (SAQs)** **[30 Marks]**

- 1. State five primary functions of the skeletal systems [5 Marks].
- 2. Discuss blood flow through the heart [6 Marks].
- 3. Explain the three processes involved in urine formation [6 Marks].
- 4. Outline four factors that affect a person's heart rate [4 Marks].
- 5. State four functions of the insulin hormone [4 Marks].
- 6. Describe the process of inspiration [5 Marks].

**SECTION III: LONG ANSWER QUESTIONS (LAQs)** **[20 Marks]**

- 1. Gastrointestinal system is involved in the process of ingestion, digestion, and absorption of food, as well as elimination of waste products.
    - a. Draw a well-labelled diagram of the stomach [6 Marks].
    - b. Explain three functions at the stomach [6 Marks].
    - c. Discuss the chemical digestion of carbohydrates from the mouth to the small intestine [8 Marks].
  - 2. The skin is the largest organ in the body.
    - a. Describe the two layers of the skin [4 Marks].
    - b. Apart from body temperature regulation, explain other five functions of the skin [10 Marks].
    - c. Explain the three mechanisms involved in heat loss from the body through the skin [6 Marks].
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