KISII UNIVERSITY SPECIAL/SUPPLEMENTARY EXAMINATIONS

Paper: CIMS 0112 HUMAN PHYSIOLOGY 1
PART I: ESSAY

SECTION A: SHORT ESSAY QUESTIONS 60 MARKS

1.
(a) What is a cell? (3 marks)
(b) Briefly outline the functions of the plasma membrane of a living cell(7 marks)
2. Describe the body's six levels of structural organization (10 marks).
3. Describe the Functions of Muscular tissue (10 marks)

4. State the Functions of the Liver (10 marks)
5. Describe the Factors that affect the rate of pulmonary and systemic gas exchange (10marks)

Part I: Section B Long Essay questions, Attempt any TWO

1.
(A). Describe the basic functions of the Digestive System. (10 marks).
(B).White short notes on

i. Swallowing/Deglutition. (5 marks)
ii. Gastroesophageal Reflux Disease.(GERD) (5 marks)

2
(A)What is the difference between an organ and a tissue? (2 marks)
(B)State the various organelles found in the eukaryotic cell and briefly explain their structures and functions. (10 marks)
(C)Explain are the processes through which materials move across membranes? (8 marks)

3.
(A) Name the componets of the integumentary system. (5 marks)
(B) Discuss the functions of the skin. (15 marks)

PART II: MULTIPLE CHOICE

Section A MCQ: Pick only ONE correct answer

1. **Cell membranes**
(A) contain relatively few protein molecules
(B) are impermeable to fat-soluble substances
(C) in some tissues permit the transport of glucose at a greater rate in the presence of insulin
(D) are freely permeable to electrolytes but not to proteins
(E) have a stable composition throughout the life of the cell

2. **The primary force moving water molecules from the blood plasma to the interstitial fluid is**
(A) active transport
(B) cotransport with H^+
(C) facilitated diffusion
(D) cotransport with Na^+

3. **Removal of the entire colon would be expected to cause**
(A) death
(B) megaloblastic anemia
(C) severe malnutrition
(D) an increase in the blood level of ammonia in patients with cirrhosis of the liver
(E) decreased urinary urobilinogen

4. **After a meal rich in carbohydrates is ingested, insulin secretion is probably stimulated by**
(A) GLP-1 (7-36) amide
(B) CCK
(C) serotonin
(D) VIP
(E) gastrin

5. **Which of the following has the highest pH?**
(A) Gastric juice
(B) Bile in the gallbladder
(C) Pancreatic juice
(D) Saliva
(E) Secretions of the intestinal glands

6. Concerning Cardiac muscle
A. Intercalated discs are a feature
B. Produces graded muscle contraction
C. Are secondary tissues
D. Are voluntary muscles

7. If neurons to a skeletal muscle are destroyed or the neuromuscular junctions become non-functional it results in

A. Hypertrophy
B. Denervation atrophy
C. Dystrophy
D. Tetany 3

8. The following are Types of epithelial tissue
A. Cartilage
B. Endocrine gland
C. Blood
D. Neuroglial

9. The following are the chemical components in the stomach that are associated with digestion
A. Carbonic anhydrase
B. peptidases
C. Salivary amylase
D. Trypsin

10. Respond to the following concerning Bile
A. It consists of cholesterol
B. It is derived from phagocystosis of aged macrophages
C.It is acidic
D.It has a pH of 2-3

In questions 11-15, match the listed abnormality with the condition it produces.

(A) Congenital defect in the distal portion of the myenteric plexus
(B) Elevated levels of direct-acting plasma bilirubin
(C) Excess gastric acid secretion

(D) Heartburn
(E) Sprue

11. Reflux of gastric contents into the esophagus

12. Allergy to wheat gluten

13. Obstruction of the common bile duct

14. Megacolon

15. Zollinger-Ellison syndrome

SECTION B: TRUE/FALSE QUESTIONS
Respond to each choice as either True or False on the answer sheet provided

1. The following are factors that affect the increase the rate of diffusion
A. Decreased concentration difference between two sides of the membrane
B. Increased temperature
C. The larger the mass of the diffusing particle, the slower its diffusion rate.
D. The larger the membrane surface area available for diffusion, the faster is the diffusion rate.
E. The greater the diffusion distance the shorter it takes, e.g. in pneumonia.
2. The following statements are True concerning Exocrine Glands
A. Are derived from epithelial tissues
B. Secrete hormones into the blood
C. Sebaceous glands are examples
D. Simple branched Acini is a structural feature
E. Are ductless

3. Concerning the Neuromuscular Junction (NMJ)
A. Muscle action potentials arise at the neuromuscular junction
B. In the (NMJ) a synapse separates a somatic motor neuron and a muscle fibre
C. The region of the sarcolemma opposite the synaptic end bulbs, are referred to as the motor end plate
D. Adrenaline is released at the NMJ
E. Acetylcholinesterase initiates formation of acetylcholine

4. The following are the main causes of PUD
A. *Helicobacter pylori*

B. Nonsteroidal anti-inflammatory drugs
C. Zollinger–Ellison syndrome
D. Aspirin
E. Chyme

5. The following are phases in deep wound healing
A. Inflammatory phase.
B. Migratory phase.
C. Proliferative phase
D. Maturation phase.
E. Hypertrophic phase

6. The following are types of Skin Glands
A. Sebaceous glands
B. Sudoriferous glands
C. Ceruminous glands
D. Eccrine glands
E. Apocrine glands

7. Concerning Surfactant
A. Its secreted into the alveoli by type II alveolar cells
B. it increases surface tension
C. It consists of phosphatidylcholine and phosphatidylglycerol
D. is removed by alveolar macrophages.
E. Lack of sufficient surfactant results in respiratory distress syndrome

8. The following factors reduce the compliance of the lungs.
A. The infiltration of lung tissue with connective tissue proteins- pulmonary fibrosis.
B. Scar lung tissue eg tuberculosis
C. Pulmonary edema
D. Deficiency in surfactant
E. Paralysis of the intercostal muscles.

9. Replication of DNA occurs in
A.Metaphase
B.Interphase
C.Anaphase
D.telophase

10. Programmed cell death is referred to as

A. Autolysis
B. Phagocytosis
C. Apoptosis
D. autophagy

11. In 1900 Karl Landsteiner is recognized
A. For the discovery of the A, B, and O blood groups.
B. For determining the structure of DNA.
C. For the discovery of the mechanism of hormone action.
D. For work on the physiology of digestion.

12. The following are true concerning Lysosome.
A. Are derived from the Golgi complex
B. Are single membrane vesicles
C. Autophagy is a function
D. Acrosomal reaction is a physiological function.
PH is maintained at 7.5

13. Concerning lung capacities, Tidal volume is
A. The volume of gas remaining in the lungs after a maximum expiration
B. The volume of gas inspired or expired in an unforced respiratory cycle
C. The total amount of gas in the lungs after a maximum inspiration
D. The amount of gas remaining in the lungs after a normal tidal expiration.

14. Concerning Asthmatic patients
A. Wheezing is caused by bronchoconstriction of the airway
B. inflammation is not a characteristic feature
C. Immunoglobulin E is produced
D. It can be induced by aspirin
E. Cytokines are released by helper T- lymphocytes in atopic asthma

15. Concerning Heamoglobin
A. Consists of four globulins and four hemes
B. Composed of alpha chains and gamma chains
C. Oxyhemoglobin is not equivalent to oxidized haemoglobin
D. Carboxyhemoglobin is the combination of heme and carbon monoxide
E. The normal arterial oxygen saturation is 97%