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University Examinations 2023/2024

FIRST YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY (UG)

HMU 3114: HUMAN PHYSIOLOGY I

DATE: APRIL 2024

TIME: 3 HOURS

INSTRUCTIONS:

- (i) The paper consists of **Three** Sections
 - (ii) Section A: Multiple Choice Questions
 - (iii) Section B: Short Answer Questions
 - (iv) Section C: Long Answer Questions
 - (v) Answer All the questions
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SECTION A: PICK THE MOST APPROPRIATE RESPONSE

Question One

Repolarization during action potential involves

- (a) K⁺ influx
- (b) Na⁺ influx
- (c) Ca⁺⁺ influx
- (d) K⁺ efflux

Question Two

Osmosis refers to movement of

- (a) Water
- (b) H⁺

(c) Na^+

(d) K^+

Question Three

The cells producing surfactant in the alveoli:

- a. Type 1 pneumocytes
- b. Type 3 pneumocytes
- c. Goblet cells
- d. Type 2 pneumocytes

Question Four

Platelet half-life is

- (a) 7 days
- (b) 120 days
- (c) 30 days
- (d) 60 days

Question Five

The main intracellular buffer is

- (a) Bicarbonate, carbon dioxide buffer
- (b) Phosphate buffer
- (c) Plasma proteins
- (d) Mitochondria

Question Six

Lipid metabolism is mainly carried out by

Nucleus

Mitochondrion

Peroxisomes

Rough endoplasmic reticulum

Question Seven

Myelination in the peripheral nervous system is done by

- (a) Oligodendrocytes
- (b) Astrocytes
- (c) Microglial cells

(d) Schwann's cells

Question Eight

The major cation in plasma is;

- (a) Ca^{++}
- (b) Na^+
- (c) K^+
- (d) Mg^+

Question Nine

The immediate precursor of mature red blood cells is

- (a) Reticulocytes
- (b) Normoblasts
- (c) Erythroblasts
- (d) Colony forming units

Question Ten

Formation of platelets is referred as

- a) Lymphopoiesis
- b) Erythropoiesis
- c) Leukoyoiesis
- d) Thrombopoiesis

Question Eleven

Erythropoietin is mainly formed by

- (a) Liver
- (b) Kidney
- (c) Thymus
- (d) Bone marrow

Question Twelve

Transcription results in the formation of

- (a) Messenger RNA
- (b) Transcription RNA
- (c) Ribosomal RNA
- (d) Protein chain

Question Thirteen

An example of hormone derived from cholesterol is

- (a) Epinephrine
- (b) Thyroxine
- (c) Cortisol
- (d) Prolactin

Question Fourteen

- a) Tri-iodotyronine is a derivative of
- b) Thyroxine Epinephrine
- c) Dopamine
- d) Thyroglobulin

Question Fifteen

A hormone that acts at the cell nucleus is

- (a) Thyroid stimulating hormone
- (b) Glucagon
- (c) Insulin
- (d) Oestrogen

Question Sixteen

Action of the parasympathetic system include the following except

- (a) Bronchocostriction
- (b) Peristalsis
- (c) Micturition
- (d) Shivering

Question Seventeen

Speed of conduction of action potential is increased in

- (a) Myelinated neurons
- (b) Small diameter neurons
- (c) Old neurons
- (d) Unmyelinated neurons

Question Eighteen

Excitatory neurotransmitters include

- (a) GABA
- (b) Glutamate
- (c) Cortisol
- (d) Glycine

Question Nineteen

Which one of the following body compartment has the largest amount of body fluid?

- a. Intracellular compartment
- b. Extracellular compartment
- c. Lymphatic compartment
- d. Intravascular compartment

Question Twenty

The major contributor of plasma oncotic pressure is

- (a) Na⁺ ions
- (b) Albumin
- (c) Y- globulins
- (d) Fibrinogen

SHORT ANSWER QUESTIONS (30 MARKS)

QUESTION ONE

Explain the five functions of the plasma membrane. (5 marks)

QUESTION TWO

Explain (5) five Factors that affect body fluids. (5 marks)

QUESTION THREE

Describe the Mechanism of Breathing in human being. (5 marks)

QUESTION FOUR

State characteristics of cardiac muscle (4 marks)

QUESTION FIVE

Explain five (5) functions of cell membrane (10 marks)

SECTION C: LONG ANSWER QUESTIONS (20 MARKS)

QUESTION ONE

With the aid of a diagram, describe the Pathway of Blood through the Heart and Lungs.

(20 marks)

QUESTION TWO

Discuss the functions of the integumentary system

(20 marks)