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(University of Choice)

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
(MMUST)**

SCHOOL OF NURSING MIDWIFERY AND PARAMEDICAL SCIENCES

UNIVERSITY EXAMINATIONS 2022/2023 ACADEMIC YEAR

FIRST year FIRST trimester – (DL)

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN NURSING
(ODEL)**

COURSE CODE: NCD 113

**COURSE TITLE: HUMAN PHYSIOLOGY (CELL PHYSIOLOGY &
CARDIOVASCULAR SYSTEM)**

DATE: Wednesday 12th April 2023

TIME: 11:30AM – 2:30AM

INSTRUCTIONS TO CANDIDATES

All questions are compulsory

DURATION: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This paper consists of 5 printed pages. Please turn over.

8. Which of the following is not found in the cell membrane?
 - a. Cholesterol
 - b. Phospholipids
 - c. Galactose
 - d. Nucleic acids

9. Protein synthesis occurs at the
 - a. Mitochondria
 - b. Lysosomes
 - c. Within the nucleus
 - d. Ribosomes

10. Which of the following is an example of a positive feedback?
 - a. Shivering to warm up in a cold winter storm
 - b. A cruise control set on your car applies more gas when going up a hill
 - c. You sweat on a hot summer's day and the blood vessels in your skin vasodilate
 - d. You get cut and platelets form a clot. This in turn activates the fibrin clotting system and more blood forms clots

11. Where in a neuron are non gated ion channels commonly located?
 - a. Throughout the neuron
 - b. On soma
 - c. On dendritic spines
 - d. On axon terminals

12. Blood pressure is the measure of pressure exerted by the blood on the _____?
 - a. Walls of the blood vessels
 - b. Arteries
 - c. Veins
 - d. Aorta

13. An example of a latent pacemaker is?
 - a. Cells of the AV node
 - b. SA node
 - c. Bundle of His
 - d. Purkinje Fibres

14. The potential at which occurrence of action potential is inevitable is?
 - a. Membrane Potential
 - b. Action Potential
 - c. Threshold potential
 - d. Hyperpolarization

15. Blood flow to skeletal muscle is controlled both by the local metabolites and sympathetic innervations of its vascular smooth muscle.

- a. True
 - b. False
16. Auto regulation refers to?
- a. Blood flow in relation to tissue metabolic activity
 - b. Maintenance of a constant blood flow in the tissues
 - c. Increased blood flow in relation to decreased blood flow
 - d. Parasympathetic response to change in blood pressure
17. The following occurs at motor end plate during action potential propagation?
- a. There is opening of calcium voltage gated calcium ion channels
 - b. Acetylcholine is degraded to choline and acetate
 - c. Acetylcholine is released by synaptic vesicles
 - d. Movement of Acetylcholine from postsynaptic to presynaptic membrane
18. Cardiac output is;
- a. the amount of blood pumped out by either auricle per unit time
 - b. the amount of blood pumped out by either ventricle per unit time
 - c. the amount of blood pumped into the auricles from vena cavae per unit time
 - d. the amount of blood pumped out of the left pulmonary artery per unit time
19. The correct sequence of levels forming the structural hierarchy is
- a. Organ, organ system, cellular, chemical, tissue, organismal
 - b. Chemical, cellular, tissue, organismal, organ, organ system
 - c. Chemical, cellular, tissue, organ, organ system, organismal
 - d. Organismal, organ system, organ, tissue, cellular, chemical
20. The largest percentage of blood is in the
- a. Lungs
 - b. Capillaries
 - c. Veins
 - d. Arteries

SECTION B: SHORT ANSWER QUESTIONS (SAQS); 40 MARKS

1. Explain the three (3) basic components of a feedback system (6 Marks)
2. State five (5) functions of body fluids (5 Marks)
3. Explain four (4) functions of cardiovascular system (8 marks)
4. With aid of a diagram, describe how impulse is generated and propagated in cardiac conductive system (8 marks)
5. State seven phases involved in the cardiac cycle (7 Marks)
6. Explain two (2) mechanisms through which increase in the blood flow to the skin occurs (4 Marks)
7. List four (4) areas where transcellular fluid can be found (2 marks)

SECTION C: LONG ESSAY QUESTIONS (LEQS); 40 MARKS

- Q1. Discuss how different body systems help in maintaining homeostasis (20 Marks)
- Q2. Discuss factors that affect venous blood flow (20 Marks)