CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR BACHELOR OF SCIENCE IN NURSING

NURU 113: MEDICALPHYSIOLOGY I

STREAMS: Y1S1 **TIME: 2 HOURS**

DAY/DATE : …….

…….

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.**
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**

MULTIPLE CHOICE QUESTIONS (20mks)

1. In the cardio inhibitory center in medulla
    a. The nerves secrete acetylcholine, which binds to muscarinic receptors
    b. K efflux causes depolarization
    c. Sends signals by way of sympathetic nerves to the SA node, AV node, and myocardium.
    d. The nerves secrete norepinephrine, which binds to β-adrenergic receptors in the heart
2. Baroreceptors
    a. Are located in the aorta and internal carotid arteries
    b. Inform the cardiac center of changes in physical activity
    c. Are sensitive to blood pH, carbon dioxide, and oxygen
    d. Found in the aortic arch, carotid arteries, and medulla oblongata
3. The following is true about Cations
    a. Elevated blood levels of K^+ or Na^+ increase heart rate
    b. Excess Na^+ enhances Ca^{2+} inflow during cardiac Aps
    c. Excess K^+ enhances generation of APs.
    d. A moderate increases in interstitial Ca^{2+} level speeds heart rate
4. Cardiac activity is depressed by the following except
    a. Hypoxia
    b. Acidosis
    c. Alkalosis
    d. Fever
5. Cardiac tamponade can be a complication of
    a. Endocarditis
    b. Pericarditis
    c. Coronary artery disease
    d. Myocarditis
6. Ribosomes are found in cell cytoplasm. They are concerned with
    a. Protein synthesis
    b. Participate in phagocytosis
    c. Phospholipids synthesis
    d. Participate in exocytosis

7. Positive chronotropic agents are
    a. Factors that raise the heart rate
    b. substances that increase contractility
    c. substances that decrease contractility
    d. Factors that decrease the heart rate
8. During atrial systole
    a. The Atrial Ventricular valves close
    b. Ventricular muscle initially shortens
    c. Contraction of the atria propels blood into the aorta and pulmonary artery
    d. Contraction of the atrial muscle narrows the orifices of the vena cava and pulmonary veins
9. The following is true about Sinoatrial Node
    a. Contains parasympathetic nerve endings
    b. is situated at the junction of the superior vena cava and Right Atria
    c. Contains sympathetic nerve endings
    d. Is situated at the junction of the pulmonary artery and Left Atria

10. Functions of Golgi complex in the cell include the following except
    a. Forms secretory vesicles that discharge processed proteins via exocytosis into the ECF.
    b. Forms membrane vesicles that ferry new molecules to the plasma membrane.
    c. Forms transport vesicles that carry molecules to other organelles, such as lysosomes
    d. Synthesizes fatty acids and steroids, e.g. estrogens
11. Storage and release of calcium ions that trigger contraction in muscle cells is a function of
    a. Rough endoplasmic reticulum
    b. Smooth endoplasmic reticulum
    c. Peroxisomes
    d. Lysosomes
12. Apoptosis is
    a. Programmed cell death
    b. Cell growth

c. Cell division
d. Cell differentiation

13. The following is true about the cell nucleus

a. The smallest organelle.
b. The only organelle visible under the light microscope.
c. Most cells have several nuclei
d. Present in all prokaryotic cells that divide

14. The following factors increases the cardiac stroke volume except
    a. Increased preload
    b. Increased contractility
    c. Increased afterload
    d. Positive inotropic agents
15. Agents with negative inotropic action include
    a. Calcium channel blocking drugs
    b. Sympathetic stimulation
    c. Digitalis
    d. Epinephrine and norepinephrine
16. Cardiac myocytes are autorhythmic. This entails that
    a. They depolarize spontaneously at regular time intervals
    b. The rate of depolarization is influenced by the ANS
    c. The rate of depolarization circulating catecholamines
    d. They are specialized
17. The following does not contain nucleus
    a. Leukocytes
    b. Erythrocytes
    c. Reticulocytes
    d. Plasma cells
18. The process of phagocytosis involves all of the following except
    a. Extension of pseudopodsprojections
    b. Formation of phagosomes
    c. Ingestion by lysosomal enzymes
    d. Release of materials from a cell
19. Transcytosis involves
    a. Endocytosis and exocytosis
    b. Osmosis and diffusion

c. Simple diffusion and facilitated diffusion
d. Transport proteins

20. The end-systolic ventricular volume in a healthy person is about
    a. 100mls
    b. 50mls
    c. 10mls
    d. 5mls

SHORT ANSWER QUESTION (30MARKS)

1. Describe the Fluid mosaic model of the plasma membrane (6mks)
2. Cardiac Output is the product of heart rate and stroke volume. Explain the three (3) factors that govern the Stroke Volume (6mks)
3. Explain the classification of plasma membrane proteins (5mks)
4. Explain four (4) functions of body water (8mks)
5. State five (5) predisposing factors to development of excess extra cellular fluid volume (Hypervolemia) (5mks)

LONG ANSWER QUESTIONS (20mks)

Describe one Cardiac Cycle (20mks)