

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**FIRST YEAR EXAMINATION FOR THE AWARD OF BACHELOR OF SCIENCE  
DEGREE IN NURSING (UPGRADING)**

**NURU 113: MEDICAL PHYSIOLOGY I**

**STREAMS: BSC. NURU (Y1S1)**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 23/04/2025**

**8.30 A.M. – 10.30 A.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.**
- 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 (20MARKS)**

1. Ribosomes are found in cell cytoplasm. They are concerned with
  - a) Protein synthesis
  - b) Participate in phagocytosis
  - c) Phospholipids synthesis
  - d) Participate in exocytosis
2. Apoptosis is
  - a) Programmed cell death
  - b) Cell growth
  - c) Cell division
  - d) Cell differentiation
3. 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

4. The following does not contain nucleus
  - a) Leukocytes
  - b) Erythrocytes
  - c) Reticulocytes
  - d) Plasma cells
5. 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
6. Cardiac activity is depressed by the following except
  - a) Hypoxia
  - b) Acidosis
  - c) Alkalosis
  - d) Fever
7. The blood contained in the ventricles during isovolumetric relaxation is termed:
  - (a) The end-systolic volume
  - (b) The end-diastolic volume
  - (c) The stroke volume
  - (d) The ejection fraction
8. The cardiac conduction system includes all of the following except
  - (a) The SA node
  - (b) The AV node
  - (c) The bundle branches
  - (d) The chordae tendineae
- 9 All of the following are functions of the proteins in the plasma membrane except:
  - (a) Some proteins are enzymes
  - (b) Most proteins are receptors
  - (c) They are involved in the transport functions
  - (d) They have important role in nuclear division
10. The small clear synaptic vesicles contain the following neurotransmitters except
  - a) Acetylcholine
  - b) Neuropeptides
  - c) Glycine
  - d) Glutamate
- 11 The connection of electrical conduction between the myocardium of atria and that of ventricles is the:
  - (a) AV node
  - (b) AV bundle
  - (c) SA node
  - (d) Purkinje fiber

## NURU 113

12. Repolarizing phase of action potential entails
  - a) The membrane potential is restored to the resting state
  - b) The negative membrane potential becomes less negative
  - c) The membrane potential temporarily becomes more negative than the resting level
  - d) Action potential is generated
13. Diastolic pressure is the
  - a) Maximum pressure during ventricular diastole
  - b) Minimum pressure during ventricular diastole
  - c) Maximum pressure during atrial diastole
  - d) Minimum pressure during atrial diastole
14. The following is a granulocyte
  - a) Monocyte
  - b) Lymphocyte
  - c) Macrophage
  - d) An eosinophil
15. The following is not a component of hemostasis
  - a). Platelet plug formation
  - b). Agglutination
  - c). Clot retraction
  - d). Vascular spasms
16. Which of the following is an inhibitory neurotransmitter
  - a) Epinephrine
  - b) Histamine
  - c) Glycine
  - d) Norepinephrine
17. The specialized area where a motor nerve terminates on a skeletal muscle fiber is called.
  - a) Axon terminal
  - b) Gap junction
  - c) Neuromuscular junction
  - d) Axon hillock
18. Which among the following is not a neuroglia
  - a) Microglia
  - b) Nissl bodies
  - c) Ependymal cells
  - d) Astrocytes
19. The end-systolic ventricular volume in a healthy person is about
  - a) 100mls
  - b) 50mls
  - c) 10mls
  - d) 5mls

20. The following are forms of endocytosis except
- a) Exocytosis
  - b) Receptor – mediated endocytosis
  - c) Pinocytosis
  - d) Phagocytosis

**SHORT ANSWER QUESTIONS (30 MARKS)**

1. Cardiac output is the product of heart rate and stroke volume. Explain the three (3) factors that govern the stroke volume (6 marks)
2. State four (4) functions of a cell (4 marks)
3. State three (3) types of neurones (3 marks)
4. State five (5) phases of the cardiac action potential. (5 marks)
5. Explain four (4) processes involved in transport across plasma membrane (8 marks)
6. Explain the difference between saltatory propagation and continuous propagation of action potentials in neurons. (4 marks)

**LONG ANSWER QUESTION (20 MARKS)**

1. Describe the electrical conducting system of the heart. (20 marks)
-