

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

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

**NURU 114: MEDICAL PHYSIOLOGY II**

**STREAMS: Y1S1**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 29/03/2021**

**2.30 P.M. – 4.30 P.M.**

**INSTRUCTIONS:**

- **Do not write anything on the question paper.**
- **Mobile phones and any other reference materials are NOT allowed in the examination room.**
- **The paper has three sections. Answer ALL questions.**
- **All your answers for Section I (MCQs) should be on one page.**
- **Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.**
- **Write your answers legibly and use your time wisely**

**MULTIPLE CHOICE QUESTIONS (20 MARKS)**

1. Ribosomes are found in all the following areas except
  - a. Nucleoli
  - b. Cytosol
  - c. Plasma membrane
  - d. Nuclear envelope
2. Excitatory Postsynaptic Potential
  - a. Is depolarizing
  - b. A single one can initiate a nerve impulse
  - c. Causes hyperpolarization of the postsynaptic membrane
  - d. Makes generation of an Action Potential more difficult than usual

3. Bundles of axons located in peripheral nervous system are called
  - a. Tracts
  - b. Nuclei
  - c. Ganglia
  - d. Nerves
  
4. Whitish appearance of the white matter in brain is due to
  - a. Myelin sheath
  - b. Nissl bodies
  - c. Blood brain barrier
  - d. Cerebral spinal fluid
  
5. The golgi complex is an organelle in a cell. Its concerned with
  - a. Phagocytosis
  - b. Protein packaging
  - c. Lipid synthesis
  - d. ATP production
  
6. The “power house” of a cell is
  - a. Rough endoplasmic reticulum
  - b. Mitochondria
  - c. Smooth endoplasmic reticulum
  - d. Nucleus
  
7. Peripheral nervous system consists of the following except
  - a. Spinal cord
  - b. Enteric nerves
  - c. Somatic nerves
  - d. Sympathetic nerves
  
8. Functions of Neuroglia includes
  - a. Controlling muscle activity
  - b. Regulating glandular secretions
  - c. Maintaining homeostasis in the Extra Cellular Fluid
  - d. Generation of action potential
  
9. Resting Membrane Potential results from the combined effect of following factors except
  - a. Diffusion of ions down their concentration gradients
  - b. Selective permeability of the plasma membrane
  - c. Electrical attraction of cations and anions
  - d. Electrolytes distributed between ECF and ICF

10. 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
  
11. In electrical synapses
  - a. Action Potentials do not conduct through gap junctions
  - b. Plasma membranes of presynaptic and postsynaptic neurons do not touch each other
  - c. There is a synaptic cleft separating presynaptic and postsynaptic neurons
  - d. The activity of a group of neurons or muscle fibers can be synchronized
  
12. The fundamental physiological properties of neurons include the following except
  - a. Excitability
  - b. Elasticity
  - c. Conductivity
  - d. Secretion
  
13. In a neuron, local potentials originate at
  - a. Cell body
  - b. Cell axon
  - c. Axon hillock
  - d. Dendrites
  
14. Most neurons in the Central Nervous System are
  - a. Unipolar
  - b. Bipolar
  - c. Multipolar
  - d. Unipolar and bipolar
  
15. Interneurons (association neurons)
  - a. Begins in almost any organ of the body
  - b. Located entirely within Central Nervous System
  - c. Send signals to muscle and gland cells
  - d. Specialized to detect internal stimuli
  
16. Which of the following statement is true
  - a. Unmyelinated axons form the white matter in CNS
  - b. Myelin prevent leakage of electric current
  - c. Unmyelinated axons are larger
  - d. Myelin decreases the speed of conduction

17. The following is true about a damaged peripheral nerve fiber
- It can regenerate if it is a sensory nerve
  - It can regenerate if there is some neurolemma
  - It can regenerate if it is unmyelinated
  - It can regenerate if it supplies an effector organ
18. The most common neurological disease of young adults is
- Parkinson's disease
  - Wallerian degeneration
  - Multiple sclerosis
  - Alzheimer disease
19. The resting membrane potential of a neuron is about
- 40millivolts
  - 50millivolts
  - 70millivolts
  - 90millivolts
20. Axoaxonic synapses entails that information is transmitted
- From axon to dendrite
  - From axon to cell body.
  - From axon to axon.
  - From dendrite to cell body

**SHORT ANSWER QUESTIONS (30 MARKS)**

1. Explain functional Classification of Neurons (6 marks)
2. The electrical signals produced by neurons and muscle fibers rely on ion channels. Explain four (4) types of ion channels (8 marks)
3. State five (5) functions of membrane proteins (5 marks)
4. Explain four (4) properties of Local Action Potentials (8 marks)
5. State three (3) examples of abnormal apoptosis (3 marks)

**LONG ANSWER QUESTIONS (20 MARKS)**

- (i) Explain three (3) differences between electrical synapse and chemical synapse. (6 marks)
  - (ii) Describe the events of signal transduction at a chemical synapse. (14 marks)
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