CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATION

RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING (UPGRADING)

NURU 114: MEDICAL PHYSIOLOGY II

STREAMS: BSc. Nursing (upgrading) (Y1S1) **TIME: 2 HOURS**

DAY/DATE: TUESDAY 04/05/2021 **2.30 P.M - 4.30 P.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**

PART I: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. 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

2. A damaged peripheral nerve fiber can regenerate if
    a. It`s soma is intact and there is some neurolemma
    b. It`s soma is intact and its unmyelinated
    c. It supply's the muscle cells or the gland cells

d. It is a sensory nerve

3. The most common neurological disease of young adults is
    a. Parkinson's disease
    b. Wallerian degeneration
    c. Multiple sclerosis
    d. Alzheimer disease
4. The resting membrane potential of a neuron is about
    a. -40millivolts
    b. -50millivolts
    c. -70millivolts
    d. -90millivolts
5. 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
6. Repolarizing phase of action potential entails
    a. The membrane potential is restored to the resting state
    b. Thenegative membrane potential becomes less negative
    c. Themembrane potential temporarily becomes more negative than the resting level
    d. Action potential is generated
7. Axoaxonic synapses entails that information is transmitted
    a. From axon to dendrite
    b. From axon to cell body.
    c. From axon to axon.
    d. From dendrite to cell body
8. 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

9. 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
10. Ribosomes are cell organelles. They
    a. Assemble amino acids into proteins
    b. Synthesize fatty acids and steroids
    c. Degrade intracellular organelles
    d. Synthesize ATP
11. Phagocytosis, endocytosis, autophagy, and autolysis in the cytoplasm are functions of
    a. Ribosomes
    b. Lysosomes
    c. Peroxisomes
    d. Nucleus
12. The “power house” of a cell is
    a. Rough endoplasmic reticulum
    b. Mitochondria
    c. Smooth endoplasmic reticulum
    d. Nucleus
13. Central nervous system consists of
    a. Cranial nerves and spinal nerves
    b. Brain and spinal cord
    c. Special sense organs
    d. Sympathetic and parasympathetic nerves
14. 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

15. Bundles of axons located in central nervous system are called
    a. Tracts
    b. Nuclei
    c. Ganglia
    d. Nerves
16. Grayish appearance of the grey matter is due to
    a. Myelin sheath
    b. Nissl bodies
    c. Tracts
    d. Ganglion
17. The fundamental physiological properties of neurons include the following except
    a. Excitability
    b. Elasticity
    c. Conductivity
    d. Secretion
18. Nervous impulse originates at
    a. Cell body
    b. Cell axon
    c. Axon hillock
    d. Dendrites
19. Most neurons in the Central Nervous System are
    a. Unipolar
    b. Bipolar
    c. Multipolar
    d. Unipolar and bipolar
20. 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

PART II: SHORT ANSWER QUESTIONS (30MARKS)

21. Explain four (4) processes involved in transport across plasma membrane (8 marks)

22. State four (4) functions of the nervous system (4 marks)

23. Explain four (4) properties of Local Action Potentials (8 marks)

24. (i) Define apoptosis (2 marks)

    (ii) State three (3) examples of abnormal apoptosis (3 marks)

25. State five (5) functions of membrane proteins (5 marks)

PART III: LONG ANSWER QUESTIONS (20MARKS)

26(i) Describe the events of signal transduction at a chemical synapse (14 marks)

(ii) State three (3) differences between electrical synapse and chemical synapse (6 marks)

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