AMREF INTERNATIONAL UNIVERSITY

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF REHABILIATIVE MEDICINE

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

END OF TRIMESTER EXAMINATIONS MAY TO AUGUST 2023

UNIT CODE: PHT 211:
UNIT NAME: Human Physiology Nervous System and Special Senses

DATE: 4TH AUGUST 2023 **TIME: 9AM-11AM**

INSTRUCTIONS

1. **All students will have two (2) hours to complete the examination**
2. **Attempt all questions as per the instruction**

Section A: Multiple choice Questions

1. Which of these is the command and control system of the body?
   a) Lungs
   b) Spinal cord
   c) Heart
   d) Brain

2. What are the coverings of the brain known as?
   a) Peritoneum
   b) Pericardia
   c) Meninges
   d) Pleura

3. What is the outer layer of the brain called?
   a) Arachnoid
   b) Pia mater
   c) Dura mater
   d) Corpus callosum

4. Which of these structures connect the cerebral hemispheres?
   a) Corpus luteum
   b) Corpus albicans
   c) Corpus callosum
   d) Corpora quadrigemina

5. Which of these is not a function of the association areas?
   a) Intersensory associations
   b) Memory
   c) Communication
   d) Breathing

6. Where is the midbrain located?
   a) Between cerebellum and medulla
   b) Between cerebrum and hypothalamus
   c) Between hypothalamus and pons
   d) Between pons and medulla

7. Which of these functions is not controlled by the medulla oblongata?
   a) Respiration
   b) Circadian rhythm
   c) Cardiovascular reflexes
   d) Gastric secretions

8. Which of the following cavities contains a component of the central nervous system?

a) abdominal
b) pelvic
c) cranial
d) thoracic

9. Which structure predominates in the white matter of the brain?

a) myelinated axons
b) neuronal cell bodies
c) ganglia of the parasympathetic nerves
d) bundles of dendrites from the enteric nervous system

10. Which part of a neuron transmits an electrical signal to a target cell?

a) dendrites
b) soma
c) cell body
d) axon

11. Which term describes a bundle of axons in the peripheral nervous system?

a) nucleus
b) ganglion
c) tract
d) nerve

12. which functional division of the nervous system would be responsible for the physiological changes seen during exercise (e.g., increased heart rate and sweating)?

a) somatic
b) autonomic
c) enteric
d) central

13. What type of glial cell provides myelin for the axons in a tract?

a) oligodendrocyte
b) astrocyte
c) Schwann cell
d) satellite cell

14. If a thermoreceptor is sensitive to temperature sensations, what would a chemoreceptor be sensitive to?

a) light
b) sound
c) molecules
d) vibration

15. Which of these locations is where the greatest level of integration is taking place in the example of testing the temperature of the shower?

a) skeletal muscle
b) spinal cord
c) thalamus
d) cerebral cortex

16. What ion enters a neuron causing depolarization of the cell membrane?

a) sodium
b) chloride
c) potassium
d) phosphate

17. Voltage-gated Na^+ channels open upon reaching what state?

a) resting potential
b) threshold
c) repolarization
d) overshoot

18. What does a mechanically gated channel respond to?

a) physical stimulus
b) chemical stimulus
c) increase in resistance
d) decrease in resistance

19. Which of the following is probably going to propagate an action potential fastest?

a) a thin, unmyelinated axon
b) a thin, myelinated axon
c) a thick, unmyelinated axon
d) a thick, myelinated axon

20. A channel opens on a postsynaptic membrane that causes a negative ion to enter the cell. What type of graded potential is this?

a) depolarizing
b) repolarizing
c) hyperpolarizing
d) non-polarizing

Section B: Essay questions (marks indicated on each question)

1. Draw a well labeled diagram of a neuron (5 mark)
2. Outline the descending pathways (5 marks)
3. Describe the autonomic nervous system in the body, its distribution and action on different organs (10 marks)
4. Draw the vision path way, what are the defects associates with it (10 Mark)
5. Outline how painful sensation is appreciated from the receptor to the brain for interpretation (10 Marks)

Section C Long answer Question (20 marks)

1. 1. Using a diagram explain how one taste for different tastes like salt, sugar, umami, sour and bitter. (20 marks)