AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCE
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF SEPT-DECEMBER 2024 TRIMESTER EXAMINATIONS

UNIT CODE: PHT 211 **UNIT NAME: : Human physiology, nervous system and special senses (special exam)**

DATE: **Day/ Date/ AUGUST**
TIME: **TWO HOURS**
START: **0:00** **STOP : 0:00**

INSTRUCTIONS (physical exams)

1. **Do not write on this question paper**

(Marks and questions distribution as per program curriculum.)

INSTRUCTIONS (Online examinations)

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This online exam shall take 2 Hours
4. Late submission of the answers will not be accepted
5. Ensure your web-camera is on at all times during the examination period
6. No movement is allowed during the examination
7. Idling of your machine for 5 min or more will lead to lock out from the exam
8. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
9. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
10. In case you have any questions call the invigilator for this exam on Tel. 0705833434 and or the Head of Department on Tel 0720491032
11. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

Section A. Answer all the questions. 30 Marks

1. Which part of the brain is primarily responsible for coordinating voluntary movements?

   A) Cerebellum
   B) Thalamus
   C) Medulla Oblongata
   D) Hypothalamus

2. Which type of glial cell is responsible for forming the myelin sheath in the central nervous system?

   A) Astrocytes
   B) Oligodendrocytes
   C) Schwann cells
   D) Microglia

3. The neurotransmitter **dopamine** is mainly involved in which of the following functions?

   A) Pain perception
   B) Memory and learning
   C) Regulation of mood and reward
   D) Muscle contraction

4. The blood-brain barrier is primarily formed by:

   A) Endothelial cells
   B) Neurons
   C) Schwann cells
   D) Astrocytes

5. The primary motor cortex is located in which lobe of the brain?

   A) Occipital
   B) Parietal
   C) Temporal
   D) Frontal

6. The **limbic system** is primarily associated with:

   A) Motor control
   B) Emotion and memory
   C) Vision and perception
   D) Speech production

7. Which neurotransmitter is most commonly associated with inhibitory functions in the brain?

   A) Glutamate
   B) Serotonin
   C) Dopamine
   D) GABA

8. The **ventricles** in the brain are responsible for:

   A) Producing dopamine
   B) Circulating cerebrospinal fluid
   C) Regulating temperature
   D) Filtering blood

9. Damage to the **Broca's area** is most likely to affect:

   A) Motor function
   B) Sensory perception
   C) Speech production
   D) Visual processing

10. Which cranial nerve is responsible for facial expressions?

    A) Vagus nerve
    B) Facial nerve
    C) Trigeminal nerve
    D) Glossopharyngeal nerve

11. The **reticular formation** is essential for:

    A) Sleep-wake cycles and arousal
    B) Muscle coordination
    C) Pain perception
    D) Sensory integration

12. Which structure regulates autonomic functions like heart rate and digestion?

    A) Hypothalamus
    B) Cerebellum
    C) Medulla Oblongata
    D) Corpus Callosum

13. The **optic chiasm** is where:

A) Smell is processed
B) Visual fields cross over
C) Language processing occurs
D) The auditory pathway is relayed

14. The **occipital lobe** is primarily responsible for:

A) Hearing
B) Vision
C) Memory
D) Movement

15. Which ion is essential for generating action potentials in neurons?

A) Calcium
B) Chloride
C) Sodium
D) Magnesium

16. The spinal cord ends at the level of:

A) T12
B) L1-L2
C) L4-L5
D) S1

17. Which layer of the meninges is closest to the brain?

A) Dura mater
B) Arachnoid mater
C) Pia mater
D) Perineurium

18. Wernicke's area is associated with:

A) Language comprehension
B) Motor skills
C) Visual processing
D) Olfactory sense

19. Which tract carries motor signals from the brain to the body?

A) Spinothalamic tract
B) Corticospinal tract
C) Reticulospinal tract
D) Vestibulospinal tract

20. **Cerebrospinal fluid** is absorbed into the bloodstream through:

A) Choroid plexus
B) Arachnoid granulations
C) Dura mater
D) Pia mater

21. In the spinal cord, **descending tracts** carry:

A) Sensory information to the brain
B) Motor commands from the brain
C) Reflex signals
D) Cerebrospinal fluid

22. Which brain wave is most commonly associated with wakeful relaxation?

A) Delta waves
B) Alpha waves
C) Theta waves
D) Beta waves

23. The **cerebellum** communicates with the brainstem through:

A) Basal ganglia
B) Cranial nerves
C) Cerebellar peduncles
D) Spinal nerves

24. Which area of the brain is crucial for processing auditory information?

A) Occipital lobe
B) Frontal lobe
C) Temporal lobe
D) Parietal lobe

25. A lesion in the **frontal lobe** could most likely cause:

A) Vision loss
B) Sensory deficit
C) Personality changes

D) Hearing impairment

26. The **basal ganglia** are primarily involved in:

    A) Coordinating voluntary movements
    B) Processing visual information
    C) Language comprehension
    D) Emotional regulation

27. Damage to the **spinal cord** at the cervical level may result in:

    A) Paraplegia
    B) Hemiplegia
    C) Quadriplegia
    D) Monoplegia

28. Which type of neuron carries signals from the CNS to muscles?

    A) Sensory neuron
    B) Interneuron
    C) Motor neuron
    D) Afferent neuron

29. **Neuroplasticity** refers to the brain's ability to:

    A) Generate electrical impulses
    B) Form new neural connections
    C) Transmit hormones
    D) Produce neurotransmitters

30. Which neurotransmitter is primarily associated with mood regulation and linked to depression?

    A) Dopamine
    B) Serotonin
    C) GABA
    D) Acetylcholine

Section Two: Short Answer Questions 5marks Each

1. Outline the clinical signs of an upper motor neuron lesion (5 marks)
2. What is the significance of the cerebrospinal fluid (CSF), and where is it produced? (5 Marks)
3. Describe the taste pathway (5 Marks)

4. Using a diagram illustrate the pain pathway from the receptor to the brain for perception (5 Marks)

Section Three: Long Answer Questions. Attempt all questions (20 Marks)

1. Describe the process of synaptic transmission in the CNS. (10 Marks)
2. Outline the spinal reflex arc and its clinical relevance. (10 Marks)