



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY

END OF TRIMESTER EXAMINATIONS JANUARY TO APRIL 2025

UNIT CODE: PHT 211

UNIT NAME: Human physiology, nervous system and special senses (Special exam)

DATE: 9th APRIL 2025

TIME: 2PM-4PM

INSTRUCTIONS

1. All students will have two (2) hours to complete the examination
2. This is an online exam, Attempt all questions as per the instruction
3. It is the student's responsibility to report any page and number missing in this paper.
4. Check that the paper is complete
5. Total number of pages is 8 including the cover.
6. Read through the paper quickly before you start.
7. Upon finishing the exam paper, on submission, the message 'Your examination has been submitted' will appear.

TOTAL: _____/70

PERCENT: _____/100%

POINTS EARNED TOWARDS FINAL GRADE _____/70

Section A. Multiple choice Question. Answer all the question (30 Marks)

1. Which of the following is NOT a function of the nervous system?

- a) Regulation of body temperature
- b) Transmission of nerve impulses
- c) Digestion of food
- d) Coordination of voluntary and involuntary actions

2. What are the two main divisions of the nervous system?

- a) Central and Peripheral
- b) Sympathetic and Parasympathetic
- c) Sensory and Motor
- d) Somatic and Autonomic

3. What is the functional unit of a synapse?

- a) Axon
- b) Dendrite
- c) Neurotransmitter
- d) Synaptic cleft

4. Which neurotransmitter is mainly involved in excitatory synaptic transmission?

- a) GABA
- b) Dopamine
- c) Glutamate
- d) Serotonin

5. What is the main inhibitory neurotransmitter in the central nervous system?

- a) Acetylcholine
- b) Dopamine
- c) GABA
- d) Glutamate

6. Which sensory receptor detects pain?

- a) Mechanoreceptors
- b) Nociceptors
- c) Thermoreceptors

d) Photoreceptors

7. Which tract carries pain and temperature sensations?

a) Corticospinal tract

b) Spinothalamic tract

c) Vestibulospinal tract

d) Reticulospinal tract

8. Which part of the brain processes somatic sensations?

a) Cerebellum

b) Sensory cortex

c) Motor cortex

d) Hypothalamus

9. What is the main function of the Pain Gate Control Theory?

a) To amplify pain signals

b) To block pain signals before they reach the brain

c) To increase pain perception

d) To allow all pain signals to pass to the brain

10. Which of the following fibers are responsible for transmitting sharp pain?

a) A-beta fibers

b) C fibers

c) A-delta fibers

d) B fibers

11. Which part of the brain controls voluntary motor activity?

a) Cerebellum

b) Motor cortex

c) Sensory cortex

d) Thalamus

12. Which reflex involves only one synapse?

a) Polysynaptic reflex

b) Withdrawal reflex

c) Stretch reflex

d) Crossed-extensor reflex

13. Which law states that dorsal roots carry sensory information while ventral roots carry

motor information?

- a) Bell-Magendie law
- b) Weber's law
- c) Dalton's law
- d) Monroe-Kellie doctrine

14. Which function is associated with the cerebellum?

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- a) Control of balance and coordination
- b) Regulation of emotions
- c) Control of heart rate
- d) Processing auditory signals

15. Which structure acts as the relay center for sensory information?

- a) Hypothalamus
- b) Cerebellum
- c) Thalamus
- d) Basal ganglia

16. Which lobe of the brain is responsible for processing visual information?

- a) Frontal
- b) Parietal
- c) Temporal
- d) Occipital

17. Which Brodmann area is responsible for speech production?

- a) 1
- b) 4
- c) 17
- d) 44

18. Which sleep stage is associated with dreaming?

- a) Stage 1
- b) Stage 2
- c) REM sleep
- d) NREM sleep

19. Where is cerebrospinal fluid (CSF) produced?

- a) Pineal gland
- b) Choroid plexus
- c) Hypothalamus
- d) Thalamus

20. What is hydrocephalus?

- a) A condition caused by excessive CSF
- b) A lack of CSF production
- c) A type of brain tumor
- d) A disorder affecting the spinal cord

Autonomic Nervous System

21. Which system is responsible for the "fight or flight" response?

- a) Somatic nervous system
- b) Parasympathetic nervous system
- c) Sympathetic nervous system
- d) Central nervous system

22. Which neurotransmitter is primarily associated with the parasympathetic nervous system?

- a) Dopamine
- b) Acetylcholine
- c) Norepinephrine
- d) Glutamate

Special Senses: Vision and Hearing

23. Which photoreceptor is responsible for color vision?

- a) Rods
- b) Cones
- c) Ganglion cells
- d) Bipolar cells

24. What is the main function of the cochlea?

- a) Maintain balance
- b) Detect sound waves
- c) Control eye movement
- d) Regulate emotions

25. Which test is used to assess hearing loss?

- a) ECG
- b) Spirometry
- c) Audiometry

d) EEG

26. Which type of reflex is the knee-jerk reflex?

a) Polysynaptic reflex

b) Superficial reflex

c) Monosynaptic reflex

d) Crossed-extensor reflex

27. Which type of paralysis results from damage to the upper motor neurons?

a) Flaccid paralysis

b) Spastic paralysis

c) Complete paralysis

d) Peripheral paralysis

28. Which deep reflex is tested by striking the Achilles tendon?

a) Patellar reflex

b) Biceps reflex

c) Triceps reflex

d) Ankle reflex

Higher Brain Functions and Sleep

29. Which type of memory is responsible for recalling facts and events?

a) Procedural memory

b) Declarative memory

c) Implicit memory

d) Reflexive memory

30. Which brain structure is most associated with memory formation?

a) Thalamus

b) Hippocampus

c) Cerebellum

d) Brainstem

Section B- Short answer question (20 Marks)

1. Describe the
 - a) Formation of cerebrospinal fluid. (2marks)
 - b) Circulation of cerebrospinal fluid. (2 marks)
 - c) functions of cerebrospinal fluid (CSF). (4 marks)
 - d) What is the significance of a lumbar puncture? (2 marks)
2. Discuss the role of
 - a) Cerebellum in movement coordination. (3marks)
 - b) basal ganglia in movement coordination. (3 marks)
 - c) Higher functions of the cerebral cortex. (4 marks) d)

Section C Long Structured question. Choose either question 1 or 2 (20 Marks)

1. Describe the vestibular apparatus and its role in balance. What are the common disorders affecting it? (20 Marks)
2. Describe the mechanism of pain sensation and explain the Gate Control Theory (20 Marks)