



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF MEDICAL SCIENCES**  
**DEPARTMENT OF REHABILITATION MEDICINE**  
**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**  
**END TERM EXAMINATION**

**UNIT CODE: PHT 224**

**UNIT NAME: NEUROSCIENCE**

**9<sup>TH</sup> APRIL 2026      TIME: 2 HOURS - START: 11:15AM      STOP: 1:15PM**

**INSTRUCTIONS**

- 1. All students will have 2 hours to complete the examination**
- 2. This is physical exam, Attempt all questions as per the instructions.**
- 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. Read through the paper quickly before you start.**

## SECTION A

1. Which one of the following is not a component of the central nervous system?
  - a. Brain
  - b. Spinal cord
  - c. Peripheral nervous system
  - d. All of the above
2. Glial cells (neuroglia) play a crucial role in primary signaling units of the nervous system responsible for transmitting electrical and chemical signals.
  - a. True
  - b. False
3. In the CNS, grey matter is composed of myelinated axons that facilitate long-range communication while white consists of neuronal cell bodies, dendrites, and synapses.
  - a. False
  - b. True
4. Which one of the following parts of a nerve cell is not correctly matched with its function?
  - a. Soma - cell body with organelles.
  - b. Dendrites - receive input.
  - c. Axon hillock - trigger zone.
  - d. Axon - conducts impulses
  - e. None of the above
5. Which one of the following is not an example of a demyelinating disease?
  - a. Guillen Barre syndrome
  - b. Multiple sclerosis
  - c. Alzheimer's disease
  - d. None of the above

6. All the following are examples of neurotrophic factors except?
  - a. Nerve growth factor (NGF)
  - b. Brain derived neurotrophic factor (BDNF)
  - c. Astrocytes
  - d. All the above
  
7. Which one of the following is the outermost covering of the brain?
  - a. Dura mater
  - b. Pia mater
  - c. Arachnoid mater
  - d. None of the above
  
8. The following are causes of peripheral neuropathies except?
  - a. Diabetes
  - b. Trauma
  - c. Infections
  - d. Vitamin B 12 deficiency
  - e. None of the above
  
9. Which one of the following is not a component of the peripheral nervous system?
  - a. Spinal nerves
  - b. Cranial nerves
  - c. Ganglia
  - d. Nuclei
  
10. Efferent fibers are involved in motor functions while afferent fibers convey sensory stimuli.
  - a. False
  - b. True

11. True or false? Pain and temperature sensation are carried by large myelinated fibers while vibration and proprioception are carried by small unmyelinated fibers.
  - a. True
  - b. False
12. True or false? Pain and temperature sensations are carried in the spinothalamic tract and decussates immediately in the spinal cord while vibration and proprioception sensation are carried in the dorsal column and ascend on the same side of the spinal cord and decussates in the brain stem.
  - a. True
  - b. False
13. True or false? C6 myotome can be assessed either by resisted elbow flexion and/or wrist extension.
  - a. True
  - b. False
14. True or false? C7 myotome can be assessed either by resisted elbow extension and/or wrist extension.
  - a. True
  - b. False
15. All extra ocular muscles are innervated by cranial nerve number III (oculomotor) except superior oblique and lateral rectus muscles
  - a. True
  - b. False
16. Which one of the following statements is true?
  - a. Superior oblique muscle is innervated by cranial nerve number IV
  - b. Superior oblique muscle is innervated by cranial nerve number VI
  - c. Superior oblique muscle is innervated by cranial nerve number III
  - d. None of the above
17. Which one of the following statements is true?
  - a. Lateral rectus muscle is innervated by abducens nerve
  - b. Lateral rectus is innervated by trochlear nerve
  - c. Lateral rectus is innervated by oculomotor nerve
  - d. All the above statements are correct
18. The motor component of cranial nerve number VII can be assessed by all the following except?
  - a. Raising eyebrows
  - b. Closing eye lids tightly
  - c. Smiling
  - d. Puffing cheeks
  - e. Tasting

19. Which one of the following statements is true regarding cranial nerves testing?
- The tongue deviates to the opposite side in cranial nerve XII pathology
  - The tongue deviates to the same side in cranial nerve XII pathology
  - The uvula deviates to the same side in cranial nerve number X pathology
  - The tongue deviates to the same side in cranial nerve number IX pathology
20. All the following tests are used to assess cranial nerve number II except?
- Visual acuity
  - Visual fields
  - Pupil inspection
  - Eye movements
21. All the following tests are used to assess cranial nerve number V except?
- Clenching teeth
  - Corneal reflex
  - Smiling
  - Sensory testing of the forehead
22. Which of the following statement is correct in regards to cognition in physiotherapy?
- Ability of patients to follow instructions
  - Ability of patients to remember prescribed exercises
  - Ensures safety of patients in physiotherapy treatment
  - All the above statements are correct
23. All the following statements are correct in regards to Glasgow Coma Scale except?
- The lowest score is recorded as 0/15
  - The lowest score is recorded as 3/15
  - Best of eye opening is scored a 4
  - Best motor response is scored a 6
24. All the following statements are correct in regards to head injury except?
- The commonest cause of head injury is road traffic accident
  - Severe head injury is denoted by Glasgow Coma Scale of 3-8/15
  - Diffuse axonal injury is readily visible on a CT scan
  - Rancho Los Amigos Scale of levels VII-X in head injury denotes patients who are increasingly independent with automatic and purposeful movement.
25. All the following are stages of motor relearning except.
- Skill acquisition
  - Skill repetition
  - Skill refinement
  - Skill retention

26. All the following are causes of secondary brain injury except?
- Hypotension
  - Hypoxemia
  - Gun shot
  - Hypoglycemia
  - Infection
27. The following are management principles of traumatic brain injury except?
- Maintain airway, breathing and circulation
  - Prevent secondary brain injury
  - Control intracranial pressure
  - Prevent complications (DVT, pressure ulcers)
  - None of the above
28. Which one of the following is not a sign of upper motor neuron lesion?
- Hyperreflexia
  - Absent reflex
  - Spasticity
  - Ankle clonus
  - Rigidity
29. Which one of the following is the least cause of spinal cord injury?
- Domestic violence
  - Road traffic accidents
  - Fall from a height
  - Gun shots
30. The following are negative factors that influence neuroplasticity except?
- Depression
  - Immobility
  - Lack of stimulation
  - Enriched environment
  - Advanced age

**SECTION B (ANSWER ALL QUESTIONS)**

1. Discuss the different planes of the body (5 marks)
2. Discuss the Manual Muscle Testing (MMT) strength grading scale (5 marks)
3. With the aid of a diagram, discuss the arterial blood supply to the brain. (5marks)
4. Discuss five negative factors that influence neuroplasticity (5marks)

**SECTION C (ANSWER ANY TWO QUESTIONS)**

1. Discuss 5 principals of neuroplasticity. (10marks)
2. Discuss 5 rehabilitation techniques that promote neuroplasticity. (10marks)
3. Compare and contrast signs of upper motor neuron lesion and lower motor neuron lesion. (10mark)

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