



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS**

**2023/2024 ACADEMIC YEAR**

**FOR THE DEGREE**

**OF**

**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**

**FOURTH YEAR, FIRST TRIMESTER EXAMINATIONS**

**COURSE CODE: BSP 413/HPT 318**

**COURSE TITLE: NEUROPHYSIOTHERAPY**

**DATE: THURSDAY 7<sup>TH</sup> DECEMBER 2023 TIME: 2:00PM – 4:00PM**

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**INSTRUCTIONS TO CANDIDATES**

**Answer all Questions**

Sec A: Multiple Choice Questions (MCQ) (20 Marks)

Sec B: Short Answer Questions (SAQ) (40 marks)

Sec C: Long Answer Questions (LAQ) (40 marks)

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over.



**SECTION A: MULTIPLE CHOICE QUESTIONS****(20 marks)**

1. A serial motor skill is a skill involving
  - A. Clearly defined beginning and end points usually requiring a simple movement
  - B. Control of small muscles to achieve a goal
  - C. A stable or predictable where the performer determines when to begin the action
  - D. A set of discrete skills in a specified order
2. In Gentiles two-dimension classification system, the environment context dimension has which two characteristics
  - A. Body transport and object manipulation
  - B. Regulations conditions and intertrial variability
  - C. Body transport and intertrial variability
  - D. Regulatory conditions and object manipulation
3. According to Gentiles two dimensional skill classification, the most complex skills would involve
  - A. Body transport, object manipulation, regulatory conditions in motion and intertrial variability
  - B. Body stability no object manipulation, stationary regulatory conditions and no intertrial variability
  - C. Body transport, no object manipulation, regulatory conditions in motion and no intertrial variability
  - D. Body stability, object manipulation, stationary regulatory conditions and intertrial variability
4. Performance changes tend to be largest in which stage of learning
  - A. Cognitive
  - B. Associative
  - C. Autonomous
  - D. Gross
5. Diversification of the movement pattern is important for which skills?
  - A. Closed skills
  - B. Open skills
  - C. Continuous skills
  - D. Gross skills
6. With which anticonvulsant medication are drug levels the most useful?
  - A. Carbamazepine
  - B. Lamotrigine
  - C. Phenytoin
  - D. Valproate
  - E. vigabatrin
7. A cyclist's hand shows wasting of intrinsic muscles and clawing of ring and little fingers. He has normal adduction of the thumb but weakness of adduction and abduction of the remaining digits. No sensory changes. Most likely lesion is:
  - A. T1 nerve root lesion
  - B. Brachial plexopathy
  - C. Median nerve lesion
  - D. Distal ulnar nerve lesion at the elbow
  - E. Lesion of the deep palmar branch of the ulnar nerve.
8. A man presents with sudden left neck pain, left Horner's and right hemiparesis. The most likely cause is:
  - A. Left internal carotid artery dissection
  - B. Left vertebral artery dissection
  - C. Middle cerebral artery CVA
  - D. Posterior inferior cerebellar artery lesion.

## E. Demyelination

9. The most likely cause of a slowly progressive spastic paraparesis in an elderly lady is
  - A. Cervical spondylitic myelopathy
  - B. Motor neurone disease
  - C. Syringomyelia
  - D. Cerebrovascular disease
  - E. Multiple Sclerosis
  - F. Thoracic disc prolapse
10. A patient in his mid-60's initially presented with bradykinesia and tremor. There was an early response to L-dopa, but there has been rapid deterioration in mental state over the subsequent 18 months. The most likely pathological diagnosis is:
  - A. Lewy bodies in cortex and substantia nigra
  - B. Lewy bodies only in basal ganglia
  - C. Neurofibrillary tangle
  - D. Amyloid changes
11. What is the most likely urological dysfunction following a CVA?
  - A. Detrusor sphincter dyssynergia
  - B. Incomplete bladder emptying
  - C. Autonomic dysreflexia
  - D. Detrusor overactivity
  - E. Loss of bladder sensation
12. During evaluation a patient is found to have detrusor -sphincter dyssynergia. This finding suggests that the neurological lies:
  - A. Between frontal lobe and the sacral spinal cord
  - B. Within the dopamine receptors of the substantia nigra
  - C. Along the hypogastric nerve
  - D. Along the pudendal and pelvic nerves
  - E. Between the pons and sacral spinal cord
13. An 11 year old male presents to the physical therapy clinic with signs of hypertonicity related to cerebral palsy. The boy has significant shortening of the left sternocleidomastoid muscle, creating a severe torticollis to the right. This has led to a pressure ulcer forming on his right ear from contact with the wheelchair headrest. The MOST appropriate course of action is to:
  - A. Begin a course of active-assisted range of motion exercises, focusing on the upper extremities and creating a home program to improve shoulder active range of motion.
  - B. Inform the patient's family that the child should not be in a wheelchair to prevent the formation of any more pressure ulcers and decrease pain associated with torticollis.
  - C. Inform the primary care provider of the child and request him/her to order an oral prescription of Baclofen because the child has developed a tolerance for the current dosage.
  - D. Begin a course of passive range of motion stretches, focusing on the neck, and instruct the patient's family on proper positioning and wheelchair adjustments to decrease the likelihood of future ulcers.
14. The following are all examples of ester local anaesthetics except:
  - A. Priolocaine
  - B. Procaine
  - C. Cocaine
  - D. Benzocaine
15. A patient with a stroke affecting the right middle cerebral artery has difficulty walking, especially over uneven surfaces. Which of the following describes the MOST appropriate initial treatment to improve the patient's ability to walk over uneven surfaces?
  - A. Place a single point cane in the patient's left hand, and train him to use a step-to gait pattern.

- B. Place a single point cane in the patient's right hand and train him to use a step-to gait pattern.
- C. Fit the patient with a 4-wheeled walker and instruct him to use a 4-point gait pattern.
- D. Fit the patient with axillary crutches and instruct him to use a 4-point gait pattern.
16. A physical therapist evaluating a 66 year old female who has a history of severe head trauma following a motor vehicle accident. The patient has difficulty with rapid alternating movements while performing neurologic testing. The BEST term to describe this specific impairment is:
- A. Ataxia
- B. Dysmetria
- C. Dysarthria
- D. Dysdiadokokinesia
17. A 79 year old female presents to outpatient rehabilitation services 6 weeks following a CVA with right hemiplegia. She complains of right shoulder pain working on functional upper extremity movements and has severe shoulder pain when practicing bed mobility activities such as rolling and scooting. On examination, it is observed that the humeral head is inferiorly displaced. Which of the following would be the MOST appropriate for her condition?
- A. Transcutaneous Electrical Nerve Stimulation (TENS)
- B. Functional Electrical Stimulation (FES)
- C. Short Wave Diathermy (SWD)
- D. Interferential Current (IFC) Stimulation
18. Autonomic dysreflexia is seen commonly in spinal cord injuries at or above which spinal level?
- A. T2
- B. T4
- C. T6
- D. T12
19. Regrading A SCI individual at which level do they have potential to be independent in transfers on level surface, upper body dressing and manual wheelchair propulsion on even terrain.
- A. C4
- B. C5
- C. C6
- D. C7
20. Using the involuntary responses to movement of the head and body for purpose of modifying muscle tone or eliciting movements is seen in.
- A. Bobath
- B. Brunnstrom
- C. PNF
- D. Rood

**SECTION B: SHORT ANSWER QUESTIONS****(40 MARKS)**

1. Match the following nervous system components with the appropriate lettered items

Nerve component	Item
	a) Groups of nerve cell bodies in the peripheral nervous system
Soma	b) The portion of the neuron in which an electrical impulse originates
Center	c) a fatty substance that covers mot axons, formed by spiraling the Schwann cells
myelin	d) An axon together with certain sheaths

ganglia	e) Cluster of cell bodies of neuron in the CNS
	f) A thin membrane between the myelin and the endoneurium of myelinated axons of the peripheral nervous system
	g) The name of the cell body of each neuron
	h) A group of nuclei whose neurons all have a specific function
Sheath of Schwann	i) A neuronal process that conducts a nerve impulse

2. Describe five theoretical models that are proposed to explain human performance, motor control and learning:
3. Outline and discuss the main electrophysiological, imaging and laboratory techniques used in neurological diagnosis
4. A patient has been brought in into the pediatric unit with cerebral palsy. Discuss 5 primitive reflex assessments you perform on the patient in order to formulate your treatment goals.
5. Differentiate between the different phases with their corresponding mechanisms
6. Using the ICF model relating to the Transverse myelitis conditions
  - a. What are some body function and structural components (1 marks)?
  - b. What are some of the activity limitations (1 marks)?
  - c. What are the participation limitations (1 marks)?
  - d. State 2 short term goals relating to 2 upper limb activities mentioned above using the ICF framework (2 marks)
7. Explain the management of sensory ataxia (5 marks)
8. Identify and describe 3 objective tests you could use to assess balance (5 marks)

### SECTION C: LONG ANSWER QUESTIONS

(40 marks)

1. Mr. Dominic Otieno has been diagnosed with Parkinsonism. He is in stage I, you have knowledge that postural dysfunctions are part of the etiology related to Parkinsonism
  - a. Identify the different types of posture (2 marks)
  - b. What muscles that are actively involved in standing (3 marks)
  - c. What are the consequences of having a forward head posture commonly seen in Parkinsonism? (5 marks)
  - d. Write on the objective assessments for posture (10 marks)
2. Ms. Rhoda has sustained a complete spinal cord transection at T2. Profile the components of ASIA tool to aid in her assessment and management.

