



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

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2020/2021 ACADEMIC YEAR

FOURTH & SECOND YEAR, FIRST TRIMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

(DIRECT & UPGRADING)

COURSE CODE: BSP 413/137

COURSE TITLE: NEUROPHYSIOTHERAPY

DATE: -----

TIME: -----

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: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.

SECTION A: MULTIPLE CHOICE QUESTIONS

(20 Marks)

- 81) 32-year-old female tragically became a paraplegic in a motorcycle accident 3 weeks ago. When family members talk to her about her loss, she ignores their questions and talks about how she will continue motor cycling as if she is still able. They are concerned about her being depressed. After a brief evaluation, it is felt that she is going through the normal grieving process. Which stage of grief is she likely experiencing?
- Anger
 - Denial**
 - Bargaining
 - Depression
- 82) The following statement relating to bladder control is incorrect:-
- Sympathetic fibres relax the bladder wall
 - Pelvic nerves via S2, 3 & 4 relax the sphincter
 - Somatic nerves via S2, 3 & 4 relax the external sphincter of the urethra**
 - Lesion of the anterior sacral nerve roots cause an atonic bladder
- 83) Regarding the cortico-spinal (pyramidal) tract which statement is true:-
- 50% originate in the post central gyrus
 - Lesion only affect proximal region of limbs
 - The motor cortex is activated before initiation of the movement**
 - They are fast conducting tract
- 84) A 12-year-old female notes repetitive jerks of her upper extremities on awakening, which make hair combing and teeth brushing difficult. The myoclonus disappears by midmorning. At the age of 14 years, while at school, she had a 5-minute generalized tonic-clonic seizure. Results of her neurologic examination are normal, and the electroencephalogram (EEG) shows irregular spikes and waves, four to six per second, particularly with photic stimulation. Which anticonvulsant is the drug of choice?
- Ethosuximide
 - Valproic acid**
 - Phenobarbital
 - Carbamazepine
- 85) Which one of the following clearly states the role of cerebellum in motor performance?
- Planning and programming of movement
 - Convert abstract thought into voluntary action
 - Initiation of skilled voluntary action
 - Smoothens and coordinates ongoing movements**
- 86) The mechanism of learning and memory include all except:
- Changes in level of neurotransmitter at synapse
 - Increasing protein synthesis**
 - Recruitment by multiplication of neurons
 - Spatial reorganization of synapse
- 87) Characteristic feature of LMNL include:-
- Wasting of the affected muscle**
 - Loss of the abdominal reflexes
 - Clonus
 - An extensor planter reflex
- 88) Recognized sign of extrapyramidal tract lesion will not include include:-
- Dysarthria
 - Cog wheel rigidity
 - Hypotonia
 - Fibrillation**
- 89) Sensory lesion in the anterolateral column of the spinal cord may characterized by all of the following except:-

- A. Loss of touch sensation ipsilaterally
 - B. Loss of pain sensation contralaterally
 - C. Exquisite pain on the opposite side**
 - D. Astereogenesis
- 90) Performing prone knee bend in sidelying instead of prone is especially good for
- a. Ruling out a discal component to the symptoms
 - b. Stabilizing the pelvis more effectively to prevent anterior tilting
 - c. Distinguishing neurodynamic from non-neurodynamic pain**
 - d. Differentiating upper lumbar from lower lumbar source out a discal component to the symptoms
- 91) A patient with posterior L thigh pain says that her thigh pain is reproduced with passive R SLR. What is the best assessment of the source of her pain?
- a. Neurodynamic
 - b. Discal**
 - c. Non-musculoskeletal
 - d. Musculoskeletal
- 92) Which of the following is most likely to result from slump testing in a pt with non-neurodynamic source of posterior R thigh pain?
- a. His pain begins with slumping and does not change with neck flexion**
 - b. His pain begins with knee extension and decreases with neck extension
 - c. His pain does increase when dorsiflexion (DF) is added to knee extension
 - d. His pain is increased with DF and decreases with neck extension
- 93) Idiopathic scoliosis is an example of a ____ spinal curve
- A. Protective, structural
 - B. Protective, non-structural
 - C. Non-protective, non-structural
 - D. Non-protective, structural**
- 94) During repeated flexion in standing, the pt says her leg pain is decreasing but her back pain is increasing. Almost as soon as she stops doing the motion, her leg pain goes back to baseline and her back pain remains increased. This response to repeated flexion in standing would best be described as centralized,
- A. Better
 - B. No better**
 - C. Worse
 - D. No worse
- 95) You are testing patient nonequilibrium coordination. You ask her to run to her right heel from her left kneecap down her left shin to the ankle and back to the knee again. The patient can touch her kneecap fairly accurately but she cannot keep the heel of the right foot on the tibial during the up and down motion. These results describe which of the following?
- a. Dysmetria
 - b. Dysdiadochokinesia
 - c. Barognosis
 - d. Dyssynergia**
- 96) What PNF patten would you use to increase and promote stability in a patient with neurological disorder
- a. Traction
 - b. Contract – relax
 - c. Approximation**
 - d. Slow reversal

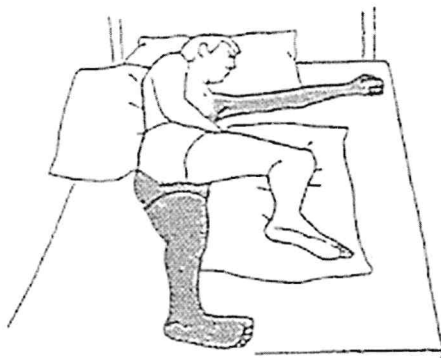
- 97) You are treating a patient with left sided CVA for 6 weeks. The patient requires assistance in planter flexion of the ankle during the push off phase of gait. Which of the following braces would be most appropriate?
- Dorsi – plantar flexion assist**
 - Dorsiflexion assist
 - Dorsiflexion stop
 - Free motion ankle joint
- 98) Which of the following would be a treatment emphasis with a neurological patient using the theory of Bobath?
- Treatment should be active and dynamic**
 - Patient learns diagonal patterns of movement
 - Encourage and assist the patient to use associated reactions
 - The developmental sequence is used in conjunction with PNF techniques
- 99) A patient sustains a traumatic head injury and demonstrates excessive tone in limbs, which are resistant to both active and passive movement. Which term listed below would best describe this condition?
- Flaccidity
 - Hypotonia
 - Hypertonia**
 - Rigidity
- 100) Which of the following medication is the most recognized drug of choice to treat parkinsonism
- Baclofen
 - Levodopa**
 - Phenol
 - Tizanidine

SECTION B: SHORT ANSWER QUESTIONS

(40 Marks)

- 27) The picture below shows a person with a right hemiplegia lying in bed.

(8 Marks)



- i. Discuss the advantages and/ or disadvantages of this position for a patient with a right hemiplegia.

Advantages	Disadvantages
<ol style="list-style-type: none"> Body weight is supported on the flat of the shoulder blade and not on the shoulder Good body alignment of the trunk The leg position prevents the patient from rolling over 	<ul style="list-style-type: none"> Side lying may reduce pulmonary function Pressure points at the malleolus, greater trochanter and humeral head of the affected limbs

<p>4. The head is bent forward preventing any choking</p> <p>5. Comfortable patient is capable is staying for long</p> <p>6. Functional activity of the affected limbs is possible</p>	<ul style="list-style-type: none"> • May cause pain in the Rt shoulder if frequent turning is not adhered to • Functional activity of the affected limbs is limited
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ii. Discuss the importance of appropriate positioning for patients with limited mobility due to neurological impairments.

Reduce the risk of:

- i. **Aspiration**
- ii. **Contracture**
- iii. **Pressure areas**
- iv. **Shoulder pain**
- v. **Swelling in the extremities**

28) You and your supervisor are treating a patient who has recently suffered a severe traumatic brain injury. Your supervisor has chosen to mobilise the patient using a tilt table. List and explain three benefits of the use of a tilt table with this patient. (8 Marks)

- a) **Increases bone density and reduces the risk of fractures**
- b) **Standing stretches muscles preventing the onset of contractures**
- c) **Improves respiration and voice control**
- d) **Enhances circulation and blood pressure**
- e) **Standing aids digestion, bowel function and bladder draining**
- f) **Facilitates the formation of the hip joint in the early development**
- g) **Standing enables children to interact eye to eye with their peers**
- h) **Improves skin integrity by relieving pressure encountered during sitting**
- i) **Improves well being alertness and sleep patterns**

29) Discuss the factors that you should consider when deciding between using an activity based versus an impairment-based approach for the assessment of a neurological patient. (8 Marks)

- a) **Assessment goals**
- b) **Cognitive aspects of the patient**
- c) **Available resources**
- d) **Environment**
- e) **Level of motor skills of the patient**
- f) **Affected mms muscle strength, endurance**
- g) **Type of motor actions**
- h) **Patient strengths**
- i) **Nature of the injury/disease/disorder**

30) You are seeing a new patient with stroke for the first time. Discuss the assessment items that would be most important in your risk assessment to assist you in deciding between using a hoist or a pivot transfer to get this patient out of bed (8 Marks)

a) Risk assessment should include:

- **Physical environment**
 - **Furniture**

- **Space**
- **Equipment.**
- **Work practices**
 1. **Training**
 2. **Adequate staff numbers**
 3. **Work hours.**
- **Patient's ability to assist**
 1. **cognitive signs**
 2. **physical signs**
 3. **behavioural signs**
 4. **clinical constraints.**

- 31) Wafula has undergone a tendon Achilles repair surgery due to a partial tear. Discuss the sequence of the interventions you would follow if you used the muscle reeducation approach (8 Marks)
- a) **Activation**
 - b) **Strength**
 - c) **Coordination**
 - d) **Endurance**

SECTION C: LONG ANSWER QUESTIONS

(40 Marks)

Case study: Questions 1 & 2

Jane is a 35 year old woman who sustained a (L) subdural haematoma following a CVA 6 weeks ago. She is mobile but one of her main problems is that she has difficulty using her (R) upper limb and lower limb in functional activities which have a spastic tone. (Modified Ashworth Scale – grade at 2)

3) Upper limb

(20 Marks)

- i. Based on your knowledge of stroke patients, what are 3 common abnormalities and their contributing factors affecting the upper limb (6 Marks)

Flexion Synergy	Extension synergy
Scapular retraction/elevation or hyperextension	Scapular protraction
Shoulder abduction, external rotation	Shoulder adduction, internal rotation
Elbow flexion	Elbow extension
Forearm supination	Forearm pronation
Wrist and finger flexion	Wrist and finger flexion

- ii. Based on the information provided, write two functional problems for Jane with regards to the upper limb. (2 Marks)
- a. **Difficulty bathing**
 - b. **Difficulty feeding**
 - c. **Grooming ,,,**

- iii. Using the ICF model write two short term goal (STG) and two long term goal (LTG) for the functional problems identified in ii (2 Marks)
- iv. You decide to use the PNF approach, describe the D1 and D2 movements you would use (10 Marks)

D1 flexion upper extremity		D1 Extension upper extremity
Shoulder	Flexion External Rotation Adduction	Extension Internal Rotation Abduction
Forearm	Supination	Pronation
Wrist	Radial deviation	Ulnar deviation
Fingers	flexion	Extension

D2 flexion upper extremity		D2 Extension upper extremity
Shoulder	Flexion External Rotation Abduction	Extension Internal Rotation Adduction
Forearm	Supination	Pronation
Wrist	Radial deviation	Ulnar deviation
Fingers	flexion	Extension

- 4) Lower limb - Jane is also experiencing difficulty with her walking. She is currently able to walk 20m, but her main problem is that her (R) knee hyperextends from the mid- to late-stance phase of gait. (20 Marks)

- a. Suggest four (4) likely contributing factors for her knee hyperextension in gait (4 Marks)

Flexion Synergy	Extension synergy
Hip flexion, abduction, external rotation Knee flexion Ankle dorsiflexion, inversion Toe dorsiflexion	Hip extension, adduction, internal rotation Knee extension Ankle plantarflexion, inversion Toe plantar flexion

- i.
- b. Explain how each of the contributing factors you suggested in (a) could cause Jane's knee to hyperextend during stance phase of gait. (4 Marks)
- i. **Impaired proprioception**
 - ii. **Weak quadriceps**
 - iii. **Pain**
 - iv. **Anterior pelvic tilt – weakens**
 - v. **Loose ligamentous integrity**
 - vi. **Impaired neural integrity**
- c. Using the ICF model write two short term goal (STG) and two long term goal (LTG) for the functional problems identified in ii (2 Marks)

- d. You decide to use the PNF approach, describe the D1 and D2 movements you would use for the lower limb (10 Marks)

D1 flexion upper extremity		D1 Extension upper extremity
Hip	Flexion External Rotation Adduction	Extension Internal Rotation Abduction
Ankle	Dorsiflexion, inversion	Planter flexion, eversion
Toes	Extension	Flexion

D2 flexion lower extremity		D2 Extension lower extremity
Hip	Flexion Internal Rotation Abduction	Extension External Rotation Adduction
Ankle	Dorsiflexion eversion	Plantar Flexion, inversion
Toes	Extension	Flexion