BACHELOR OF SCIENCE IN PHYSIOTHERAPY (DIRECT)

COURSE CODE: PHT 313

COURSE TITLE: NEUROREHABILITATION I (Special exam)

DATE: 7th April 2025 **TIME: 11.15am-1.15pm**

INSTRUCTIONS TO CANDIDATES
Answer All Questions

Section A: Multiple Choice Questions (MCQ)	30 Marks.
Section B: Short Answer Questions (SAQ)	20 Marks.
Section C: Long Answer Question (LAQ)	20 Marks

TIME: 2 Hours

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQ) 20 MARKS

1. Which of the following scales is used to assess muscle spasticity?

   a) Berg Balance Scale
   b) Ashworth Scale
   c) Glasgow Coma Scale
   d) Rancho Los Amigos Scale

2. The Glasgow Coma Scale assesses:

   a) Muscle tone
   b) Balance and coordination
   c) Consciousness level
   d) Reflex integrity

3. The Rancho Los Amigos Scale is primarily used to assess:

   a) Spasticity
   b) Motor function in stroke patients
   c) Cognitive recovery after head injury
   d) Sensory integration

4. Which of the following is not a neurological special test?

   a) Kernig's sign
   b) Slump test
   c) Romberg's test
   d) Lachman's test

5. The Barthel Index is used to measure:

   a) Reflex integrity
   b) Activities of daily living (ADLs)
   c) Balance and coordination
   d) Spasticity levels

6. What is the main purpose of the ASIA scale?

   a) Assess traumatic brain injuries
   b) Classify spinal cord injuries
   c) Evaluate gait abnormalities
   d) Assess upper limb function

7. Which test is used to evaluate balance and coordination?

   a) Mini-Mental State Examination
   b) Functional Independence Measure (FIM)
   c) Berg Balance Scale
   d) Ashworth Scale

8. The Mini-Mental State Examination (MMSE) is primarily used to assess:

   a) Gait abnormalities
   b) Cognitive function
   c) Sensory integration
   d) Motor reflexes

9. Tinel's sign is used to assess:

   a) Spinal cord integrity
   b) Nerve regeneration
   c) Balance impairment
   d) Cortical sensation

10. Bobath therapy is based on:
    a) Reflex inhibition and facilitation
    b) Gait analysis
    c) Strength training
    d) Muscle hypertrophy

11. Proprioceptive Neuromuscular Facilitation (PNF) emphasizes:

    a) Repetitive movement patterns
    b) Stretching and muscle relaxation
    c) Isolated muscle strengthening
    d) Sensory integration

12. Which of the following is not a neurophysiological approach?

    a) Brunnstrom Movement Therapy
    b) Vojta Therapy
    c) McKenzie Method
    d) Constraint-Induced Movement Therapy

13. The Rood approach primarily focuses on:

a) Sensory stimulation techniques
b) Strength training
c) Cognitive rehabilitation
d) Vestibular rehabilitation

14. Which approach emphasizes task-oriented motor control?

a) Bobath Concept
b) Carr and Shepherd's Approach
c) Sensory Integration Therapy
d) Brunnstrom Therapy

15. Sensory Integration Therapy is most commonly used for: a) Stroke rehabilitation
b) Spinal cord injuries
c) Children with sensory processing disorders
d) Balance training in older adults

16. Constraint-Induced Movement Therapy (CIMT) is used to:

a) Strengthen unaffected limbs
b) Improve balance
c) Encourage use of the affected limb
d) Reduce spasticity

17. Neurodevelopmental Treatment (NDT) was developed by:

a) Bobath
b) Brunnstrom
c) Kabat
d) Carr and Shepherd

18. Which approach is primarily used for motor relearning?

a) Rood's Approach
b) Sensory Integration Therapy
c) Carr and Shepherd's Approach
d) Brunnstrom Therapy

19. Vojta Therapy is based on:

a) Primitive reflex stimulation
b) Strength training principles

c) Balance control
d) Cognitive training

20. Which gait pattern is most commonly seen in hemiplegia?
a) Ataxic gait
b) Circumductory gait
c) Trendelenburg gait
d) Scissor gait

21. The Ashworth Scale is used to assess:

a) Sensory perception
b) Muscle spasticity
c) Reflex response
d) Cognitive impairment

22. What does the Functional Independence Measure (FIM) evaluate?

a) Reflex development
b) Sensory impairments
c) Functional ability in daily activities
d) Spasticity levels

23. The Barthel Index primarily assesses:

a)Fine motor skills
b) Activities of Daily Living (ADLs)
c) Reflex function
d) Vestibular function

24. Which of the following best describes the neurophysiological basis of the "Repeated Contractions" technique in PNF?
a) Enhances reciprocal inhibition of antagonist muscles
b) Reinforces muscle spindle activation for sustained contraction
c) Inhibits overactive stretch reflexes
d) Facilitates cortical remapping without engaging peripheral receptors

25. During rehabilitation of a patient with cerebellar ataxia, which PNF technique would be most effective in improving postural control?
a) Alternating Isometrics
b) Agonistic Reversals
c) Hold-Relax
d) Rhythmic Rotation

26. Which PNF principle is used to enhance trunk stability in a patient with multiple sclerosis experiencing poor postural control?
    a) Rhythmic Stabilization
    b) Hold-Relax
    c) Successive Induction
    d) Quick Stretch

27. Which of the following best describes the role of PNF in neuroplasticity-based motor recovery?
    a) Strengthens unaffected muscle groups to compensate for weakness
    b) Promotes motor relearning through repetitive functional movement patterns
    c) Reduces the need for sensory feedback during movement execution
    d) Uses passive movements to bypass voluntary motor control

28. In a patient with spastic hemiparesis following a stroke, which PNF technique would be most appropriate to facilitate controlled movement while minimizing abnormal synergy patterns?
    a) Slow Reversal
    b) Rhythmic Stabilization
    c) Hold-Relax Active Movement
    d) Quick Stretch

29. Which of the following principles is fundamental to Proprioceptive Neuromuscular Facilitation (PNF) in neurological rehabilitation?
    a) Isolated muscle activation
    b) Reflex-based motor control
    c) Spiral and diagonal movement patterns
    d) Linear and symmetrical movement patterns

30. A patient with a spinal cord injury is having difficulty learning how to transfer from mat to wheelchair. The patient just cannot seem to get the idea of how to coordinate this movement. In this case, what is the MOST effective use of feedback during early motor learning?
    a. Focus on knowledge ofpe1formance and proprioceptive inputs.
    b. Focus on guided movement and proprioceptive inputs.
    c. Provide feedback only after a brief (5-sec) delay.
    d. Focus on knowledge of results and visual inputs.

SECTION B: SHORT ANSWER QUESTIONS (SAQ) 20 MARKS
ANSWER ALL QUESTIONS. Each question is 5 marks

1. A 55-year-old post-stroke patient presents with weakness in the right upper limb and difficulty in initiating voluntary movements. How would you apply Rhythmic Initiation as a PNF technique to improve movement initiation in this patient (5 MARKS)
2. How does the Motor Relearning Programme (MRP) differ from the Bobath approach in the rehabilitation of neurological patients (5 marks)

3. Explain the key principles of the Rood Approach in neurorehabilitation and describe how it can be applied to improve motor function in a patient with hypotonia due to stroke (5 marks)
4. Criticize the reflex theory mechanism of motor control (5 marks)

SECTION C: LONG ANSWER QUESTIONS (LAQS) 20 MARKS
ANSWER ALL QUESTIONS EACH ONE IS 10 MARKS

1. Critically discuss the role of the ICF model in guiding **stroke rehabilitation**. How does it enhance a patient-centered approach, and what are its advantages over traditional impairment-based models (10 MARKS)
2. Constraint-Induced Movement Therapy (CIMT) is based on the concept of neuroplasticity. Explain how CIMT promotes cortical reorganization and motor recovery after stroke (10 MARKS)