



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

**UNIT CODE: PHT 313**  
**UNIT NAME: NEUROREHABILITATION 1**  
**DATE: 6th APRIL 2025**  
**TIME: 6pm to 8:30pm**

**INSTRUCTIONS**

1. All students will have three (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.

**All the Best!!**

**TOTAL: \_\_\_\_\_/70**

**PERCENT: \_\_\_\_\_/100%**

**POINTS EARNED TOWARDS FINAL GRADE \_\_\_\_\_/70**

**SECTION A: multiple choice questions. Answer all the questions (30 Marks)**

1. Individuals with a spinal cord injury have a higher risk of developing obesity. What factor does NOT contribute to this higher risk?

- a) A lower basal metabolic rate.
- b) A reduced muscle mass.
- c) A lower venous return
- d) A lower activity level.

2. Upper motor neuron syndrome post stroke is characterized by:

- a) Hyper-reflexia
- b) Clonus
- c) Paresis
- d) All above-mentioned options

3. The lack of muscle tone is called:

- a) Hypertonia
- b) Hypotonia
- c) Myotonia
- d) Dystonia
- e) Atonia

4. Abnormally increased muscle tone is properly termed:

- a) Hypotonia
- b) Myotonia
- c) Dystonia
- d) Atonia
- e) Hypertonia

5. Which of the following is NOT a component of the RICE protocol used in acute injury management?

- a) Rest
- b) Ice
- c) Compression
- d) Elevation
- e) Heat

6. Which of the following is a common goal of physiotherapy rehabilitation for musculoskeletal injuries?

- a) Decreasing range of motion
- b) Increasing pain intensity
- c) Improving muscle strength and flexibility
- d) Limiting functional activities
- e) Increasing inflammation

7. Which of the following exercises is typically used to strengthen the muscles around the knee joint?
- a) Bicep curls
  - b) Leg press
  - c) Shoulder shrugs
  - d) Tricep kickbacks
  - e) Calf raises
8. What is the primary purpose of proprioceptive neuromuscular facilitation (PNF) techniques in rehabilitation?
- a) To increase muscle stiffness
  - b) To improve joint mobility
  - c) To decrease muscle coordination
  - d) To enhance muscle strength and flexibility
  - e) To reduce blood flow to injured tissues
9. Which of the following modalities is commonly used for pain management in physiotherapy rehabilitation?
- a) Ultrasound
  - b) TENS (Transcutaneous Electrical Nerve Stimulation)
  - c) Cryotherapy
  - d) Electrical muscle stimulation
  - e) All of the above
10. The term "gait training" refers to:
- a) Training individuals to swim efficiently
  - b) Teaching proper posture while sitting
  - c) Rehabilitation exercises for shoulder injuries
  - d) Teaching proper walking patterns and techniques
  - e) None of the above
11. Which of the following is a potential benefit of hydrotherapy (water therapy) in physiotherapy rehabilitation?
- a) Increased joint stiffness
  - b) Decreased blood circulation
  - c) Reduced weight-bearing on joints
  - d) Limited range of motion
  - e) Decreased buoyancy

12. What is the purpose of using orthotics in physiotherapy rehabilitation?

- a) To restrict movement of joints
- b) To provide support and alignment to body parts
- c) To induce muscle weakness
- d) To decrease circulation to injured areas
- e) To increase instability

13. Which of the following is a common indication for neuromuscular re-education in physiotherapy rehabilitation?

- a) Decreased muscle strength
- b) Normal muscle tone
- c) Impaired balance and coordination
- d) Complete joint immobilization
- e) Excessive joint flexibility

14. In the context of physiotherapy rehabilitation, what does the term "eccentric contraction" refer to?

- a) Shortening of a muscle while contracting
- b) Lengthening of a muscle while contracting
- c) Muscle relaxation
- d) Static muscle contraction
- e) None of the above

15. True or False: Guillain-Barré Syndrome occurs when the body's immune system attacks the myelin sheath on the nerves in the central nervous system.\*

- a) True
- b) False

16. A PT is treating a 56-year-old with a TBI secondary to a burst brain aneurysm.

The referral papers read that the patient is a level V on the Rancho Los Amigos Level of Cognitive Function scale. Which of the following treatment options would best fit into your plan of care for this patient.

- a) Maintaining respiratory status and prevention of respiratory complications by the use of postural drainage, percussion, and suction.
- b) Allow the pt to increase independence by moving activities from closed environments to open environments.
- c) Encourage the pt to carry on an active lifestyle that improves cardiovascular endurance. Discuss with the family the importance of keeping the patient active.
- d) Promote early return to ADLs by positioning the patient in proper body alignment and sitting them upright

- e) e.Promote and emphasize safety and behavioral management techniques in a structured, low stimulating environment.

17. A pt who recently was diagnosed with a C7 complete spinal cord injury, secondary to MVA, has asked her physical therapist what complications come along with being a spinal cord injured person. Which of the following answers is NOT a correct response to the pt's question?

- a) Discuss with the patient the change in vital capacity, as the pt at first will initially only have 30% of what she had before, but with hard work, she will be able to return to 90-100%.
- b) Describe to the patient what ulcers are and discuss the importance of performing pressure relief 3-4 times an hour and how a turning program will help eliminate that risk.
- c) Educate the patient on deep vein thrombosis' and explain that these are common during the first 3 months of recovery and can be prevented by a regular turning program, PROM, elastic stockings, and proper positioning of the lower extremity.
- d) Discuss with the patient how temperature internally and externally will now affect her. At first, the pt will have difficulty with hypothermia, and then eventually, that will change to hyperthermia. This is all due to a lack of control over sweat glands and initial difficulties with vasodilation.
- e) Educate the patient about the importance of daily exercise not only to improve function but also to prevent heterotopic bone formation.

18.The following modalities can be carried out for people with acute edema except.....

- a) Cryotherapy
- b) Thermotherapy
- c) Electrotherapy
- d) Exercise therapy

19. Which of the following is ideal for gait training in rehabilitation of a client with CVA?

- a) Zimmer frame
- b) Elbow crutch
- c) Axillary crutch
- d) Tetrapod/tripod

20. How is an apparent leg length measured?

- a) From the umbilicus to the lateral malleolus
- b) From the umbilicus to the medial malleolus
- c) From the anterior superior iliac spine(ASIS) to the medial malleolus
- d) From the anterior superior iliac spine to the lateral malleolus

21. Which of the following intervention is contraindicated for clients with deep vein thrombosis (DVT)?
- a) Gait training
  - b) Deep calf massage
  - c) Bed exercise Closed chain exercise
  - d) Bridging
22. A 17-year-old football player sustained a noncontact knee injury while planting his leg to make a cut. He heard a pop and felt his knee buckle. What is the most sensitive clinical test to establish the diagnosis?
- a) Anterior drawer
  - b) Faber
  - c) Lachman
  - d) McMurray
23. A 57-year-old man sustained a stroke one year ago. He now has good voluntary control of the affected arm, with elbow and shoulder strength at 4/5, wrist extension at 2+/5, finger extension at 2-/5, and fair grip. Tone is minimally increased throughout the arm and sensation is intact. What is the most effective means of improving his hand function?
- a) Alternating hot and cold stimulation to the affected hand
  - b) Electromyographic biofeedback for the wrist extensors
  - c) Intensive training of the unaffected hand in one-handed techniques
  - d) Restraining the unaffected hand during activities of daily living
24. Which of the following statements is true for multiple sclerosis?
- a) A disorder of neuromuscular function caused by impaired ability of neurotransmitter
  - b) A degenerative disease of substantia nigra
  - c) A chronic progressive disease characterized by demyelinating lesions throughout the central nervous system
  - d) A group of inherited degenerative disorders of the anterior horn cell causing muscle atrophy
25. An old CVA patient walked into a physiotherapy centre to make enquiry about the need to undertake exercises to help improve his gait. On assessment the physiotherapist noticed the patient walks with a high stepping gait with marked hip abduction and a missed heel strike at the stance phase of walking. Which of the following series of interventions would be MOST appropriate to consider?

- a) Open chain quadriceps strengthening on quads bench, heel raise exercises against the wall bars and the closed chain isokinetic leg press
- b) Hamstring toning, heel raise exercises against the wall bars and closed chain isokinetic leg press
- c) Open chain quadriceps strengthening on quads bench, functional electrical stimulation (FES) for the calf muscles and massage for the calf muscles
- d) Applying electrical stimulation to the major extensors of the lower limb, open chain quadriceps strengthening and thermotherapy

26. A 65 year old woman suddenly experienced difficulty in walking without any history of trauma. On examination she presented with marked weakness in both legs (muscle power grade 2+/5), high knee jerk reflexes with sensory disturbance. Which of the following could be a possible differential diagnosis?

- a) a) Lower motor neurone lesion
- b) b) Upper motor neurone lesion
- c) c) Peripheral nerve lesion
- d) d) Muscle fatigue

27. Dysdiadochokinesia refers to \_\_\_\_\_.

- a) Inability to walk
- b) Excessive movements of the appendages
- c) Ignoring one side of the body opposite brain damage
- d) Inability to do alternating movements
- e) Loss of fear

**SECTION B: Short answer questions. Answer all the questions (20 marks)**

28. Define bed mobility and give an example (5 marks)

28. Define bed to wheelchair transfers (5 marks)

29. What is a muscle contracture and give examples? (5 marks)

30. Types of Rigidity and give examples (3 marks)

31. Define the reflex test and give examples (5 marks)

**SECTION C: Long answer questions. Answer all the questions (20 marks)**

32. Case Study 1:

Patient Profile: A 60-year-old female diagnosed with quadriparesis with a history of chronic low back pain presents with worsening symptoms over the past six months. She reports difficulty with daily activities and reduced quality of life due to her back pain.

1. What factors would you consider in assessing this patient's chronic low back pain? (5 marks)
2. Develop a multidisciplinary rehabilitation plan for this patient, including physiotherapy interventions and potential referrals to other healthcare professionals. (5 marks)

33. Case Study 3:

Patient Profile: A hemiparesis 70-year-old male underwent total knee replacement surgery three months ago. He is experiencing difficulty with activities of daily living and reports persistent stiffness and weakness in the operated knee.

1. What are the common rehabilitation goals for patients following total knee replacement surgery? (5 marks)
2. Describe a progressive rehabilitation program for this patient, focusing on addressing stiffness and weakness in the knee joint. (5 marks)