



**AMREF INTERNATIONAL UNIVERSITY  
SCHOOL OF MEDICAL SCIENCE  
DEPARTMENT OF REHABILITATION MEDICINE  
BACHELOR OF SCIENCE IN PHYSIOTHERAPY  
END OF MAY-AUGUST 2024 TRIMESTER EXAMINATIONS**

**UNIT CODE: PHT 236                      UNIT NAME: MUSCULOSKELETAL DISORDERS 1**  
**DATE:                      TUESDAY/ 6<sup>TH</sup>/ AUGUST**  
**TIME:                      TWO HOURS**  
**START:                      11:15 AM                      STOP : 1:15PM**

**INSTRUCTIONS (physical exams)**

1. Do not write on this question paper  
(Marks and questions distribution as per program curriculum.)

**INSTRUCTIONS (Online examinations)**

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This online exam shall take 2 Hours
4. Late submission of the answers will not be accepted
5. Ensure your web-camera is on at all times during the examination period
6. No movement is allowed during the examination
7. Idling of your machine for 5 min or more will lead to lock out from the exam
8. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
9. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
10. In case you have any questions call the invigilator for this exam on Tel. 0705833434 and or the Head of Department on Tel 0720491032
11. For adverse incidences please write an email to: [amiu.examinations@amref.ac.ke](mailto:amiu.examinations@amref.ac.ke)

1. Which blood vessel represents the greatest arterial supply to the hip joint?
  - A. Lateral femoral circumflex
  - B. Artery to the head of femur
  - C. Medial femoral circumflex
  - D. Superior gluteal
  
2. Which of the following is NOT a benefit of taking History during subjective examination?
  - A. To determining any potential underlying etiology
  - B. To highlight psychological factors that might impact the prognosis
  - C. To prioritize the tests and measures to be used
  - D. To enable the therapist, confirm the diagnosis
  
3. Symptoms can be described by considering four main components. Which of the following is NOT one of these components?
  - A. Irritability of the symptoms
  - B. Aggravating symptoms
  - C. Frequency of the symptoms
  - D. Intensity of the symptoms
  
4. Which of the following tools is not used to measure muscle length?
  - A. Goniometer
  - B. Dynamometry
  - C. Tape measure
  - D. Inclinator
  
5. Which of the following is NOT a principle of skeletal traction in management of fractures?
  - A. Skin care
  - B. Line of traction
  - C. Early mobilization
  - D. Counter traction
  
6. Which of the following muscles are NOT tested in modified Thomas test?
  - A. Perifomis muscle
  - B. Iliopsoas muscle
  - C. Rectus femoris
  - D. Abductor muscles of the thigh
  
7. The following is NOT a common symptom of fracture?
  - A. Deformity
  - B. Itchiness
  - C. Swelling
  - D. Pain

8. During a passive range of motion (ROM) test of the shoulder, a physical therapist feels a slight resistance followed by a gradual restriction at the end of external rotation. This end feel is most likely caused by tightness in which structure?
- A. Muscle
  - B. Tendon
  - C. Ligament
  - D. Joint Capsule
9. John, a 42-year-old construction worker, presents to the physiotherapy department complaining of pain and stiffness in his right knee joint for the past two weeks. He states the pain started after a misstep while carrying heavy materials at work. He reports difficulty bending and straightening his knee fully, especially in the mornings. John denies any recent injuries or accidents. As a physiotherapist carrying out the examination, which myotome are you likely to assess according to John's history
- A. L4
  - B. L3
  - C. L2
  - D. L1
10. A 45-year-old single mother presents with a two-week history of right neck pain radiating down the medial aspect of his forearm. He describes the pain as a sharp, burning sensation that worsens with prolonged overhead activities and carrying heavy objects. He also reports occasional numbness and tingling in the thumb, index, and middle fingers of his right hand. Which upper limb test would be most appropriate to assess potential nerve root involvement?
- A. Median bias upper limb tension test
  - B. Spurling's Test
  - C. Ulna bias upper limb tension test
  - D. Radial bias upper limb tension test
11. Which of the following is NOT a factor that affects healing of fracture?
- A. Blood supply
  - B. Age
  - C. Nutrition
  - D. Occupation
12. Which of the following is NOT a principle of fracture management?
- A. Rehabilitation
  - B. Weight bearing
  - C. Immobilization
  - D. Reduction

13. 16-year-old Michael fractures his right elbow after a fall from his bike. He undergoes surgery to fix the fracture, and afterwards, his arm is placed in a cast. Two days later, Michael complains of extreme pain, tightness, and numbness in his forearm and hand. He also reports feeling increasingly weak in his grip. Unfortunately, the doctor dismisses Michael's complaints as typical post-surgical discomfort and doesn't investigate further. The cast remains unchanged. Weeks later the cast is removed and Michael is referred for physiotherapy. The therapist notices an obvious deformity, "claw-like" deformity. Based on the history given and the clinical presentation, which of the following is the likely complication?
- A. Volkmann's ischemic contracture
  - B. Compartment syndrome
  - C. Dinner fork deformity
  - D. Cubitus varus deformity
14. Based on the above question (13), which of the following is NOT a goal of physiotherapy?
- A. Improve range of motion in the hand and fingers
  - B. Improve hand function for daily activities
  - C. Prevent contractures from worsening
  - D. Improve co-ordination for Activities of Daily Living (ADLs)
15. Which of the following test is necessary before performing Maitland techniques on the cervical spine?
- A. Cervical joint range of motion
  - B. Upper limb reflexes
  - C. Blood pressure
  - D. Spurling test
16. Which of the following is NOT a differential diagnosis for fat embolism?
- A. Acute respiratory distress syndrome
  - B. Heart attack
  - C. Pneumonia
  - D. Pulmonary embolism
17. Which statement best reflects the Mulligan concept of positional fault?
- A. Injuries always lead to major structural damage.
  - B. Pain is solely a result of tissue inflammation.
  - C. Minor joint misalignments can restrict movement.
  - D. Traditional physical therapy techniques are ineffective.
18. Which of the following is NOT a type of mal union in fracture healing?
- A. Gapping
  - B. Linear
  - C. Rotation
  - D. Angulation

19. Which of the following is NOT part of the 4 steps of McKenzie methods?
- A. Classification
  - B. Treatment
  - C. Prevention
  - D. Manipulation
20. Mulligan Mobilization with Movement (MWM) techniques aim to address:
- A. Trigger points
  - B. Joint tracking problems
  - C. Muscle imbalances
  - D. Scar tissue adhesions
21. The following is the best parameter of classification of Pes Planus?
- A. Heel inversion angle
  - B. Arc height
  - C. Rigidity
  - D. Symptoms
22. Which of the following is NOT a precaution for hip arthroplasty?
- A. Adduction of the leg beyond the body midline
  - B. Internal rotation of the leg
  - C. External rotation of the leg
  - D. Flexion of more than 90 degrees of the hip joint
23. A 25-year-old healthy male cyclist is involved in a high-speed collision with a car. Upon emergency medical services arrival, he is found with a visibly deformed left thigh and is unable to bear weight on the leg. During the initial assessment indicate he has sustained fracture midshaft femur, which neurological structure are at the biggest risk of affected by this kind of fracture?
- A. Sciatica nerve
  - B. Femoral nerve
  - C. Perineal nerve
  - D. Obturator nerve
24. 10-year-old Nick took a tumble while skateboarding and landed hard on his outstretched arm. After an x-ray at the emergency room, the doctor diagnosed him with a displaced supracondylar fracture. Due to the displacement, (ORIF - Open Reduction Internal Fixation). The Surgeon asked Billy to come for review after 2 weeks. At what stage of healing is the fracture on the 2<sup>nd</sup> week?
- A. Reparative stage
  - B. Inflammatory stage
  - C. Remodeling stage
  - D. Acute Stage

25. A 19-year-old college basketball player, dislocates his left shoulder while playing the game in a intervarsity tournament a few weeks ago. After his initial management, the surgeon refers him for physiotherapy. Which shoulder movements will the physiotherapy be cautions in the early stages of the rehabilitation program?
- A. Internal rotation
  - B. External rotation
  - C. Shoulder abduction
  - D. Shoulder adduction
26. In question 25, what is the likely mechanism of injury for the 19-year-old basketball player?
- A. Collusion on the shoulder with the opponent player
  - B. Direct fall on the shoulder
  - C. Fall on outstretched extend, abducted and externally rotated arm
  - D. Fall on outstretched flexed, adducted and internally rotated arm
27. Sarah, a 35-year-old secretary at a law firm, presents with acute low back pain that began two days ago after lifting a heavy box at work. The pain is constant, sharp, and radiates down her right buttock but not below the knee. Pain Intensity: Sarah reports her pain as an 9 out of 10 on the Visual Analog Scale (VAS), where 0 is no pain and 10 is the worst pain imaginable. She is visibly irritated by the pain. The physiotherapist decides to utilize the Maitland techniques to manage the low back pain. Which of the following is the ideal dose that should be used by the physiotherapist?
- A. Grade III at 2Hz/min for 30 sec to 1 minute
  - B. Grade IV at 2 Hz/min for 30 sec to 1 minute
  - C. Grade I at 2 Hz/min for 30sec to 1 minute
  - D. Grade II at 2 Hz/min for 30 sec to 1 minute
28. John, a 32-year-old carpenter, walks into a physical therapist's office complaining of low back pain radiating down his right leg for the past week. It started after a long day lifting heavy beams at work. He describes the pain as a sharp ache that gets worse when he sits for extended periods and tries to bend over to tie his shoes. The physiotherapist performs a detailed assessment, including a movement evaluation. During the evaluation, John notices that his pain seems to ease slightly when he leans back into an extension arch but gets significantly worse when he tries to round his back forward. Interestingly, the pain in his leg also seems to lessen when he extends his back. Based on the above findings, classify the John using the McKenzie classification
- A. Dysfunction syndrome
  - B. Postural syndrome
  - C. Non-mechanical syndrome
  - D. Derangement syndrome

29. Which of the following is NOT a principle of treatment in the Mulligan concept?
- A. A passive accessory joint mobilization is applied following the principles of Kaltenborn
  - B. During assessment the therapist will identify one or more comparable signs.
  - C. During the treatment the therapist can request the patient to perform the comparable sign without applying the glide
  - D. The therapist must continuously monitor the patient's reaction to ensure no pain is recreated.
30. A young man with a diagnosis of hypogonadism is at increased risk for osteoporosis. This is because low levels of which hormone are essential for bone health?
- A. Estrogen
  - B. Testosterone
  - C. Progesterone
  - D. Folate

**Section B. Attempt all the questions (20 Marks)**

1. In a medical setting, healthcare professionals assess soft tissue tenderness as one of the indicators of a patient's condition. Describe a commonly used grading system for soft tissue tenderness (4 Marks)
2. Explain how to test the myotome of the thumb (4 Marks)
3. What is the difference between the short-term goals and long-term goals (4 Marks)
4. Describe the Jefferson's fracture (4 Marks)
5. Explain how to carry out Upper limb tension test (ULTT) radius bias (4 Marks)

**Section C. Attempt one question in this section (20 Marks)**

1. David, a 21-year-old male university student sustains a serious injury while playing rugby in intervarsity games. After clearing the pitch and the initial first aid treatment, he is transferred to an Emergency Room in a near by hospital for further examination. After diagnostic procedures, the attending doctor, informs David has sustained a stable fracture at C7 level. Initial examination reveals that he has not sustained any neurological deficits and has no adverse reaction from the injury. He is expected to make full recovery. However, the doctor admits him in the hospital for further observations. After 5 days the multi-disciplinary team meets and decides to discharge David on a rigid collar and to commence physiotherapy management in a few days. David comes to the outpatient clinic 3 days later. Discuss the physiotherapy management you will give David from this stage till return to sport stage. (20 Marks)
2. Sarah Ocheing , is a 52-year-old accountant. She wakes up one morning with a dull ache in her right shoulder. It feels stiff, especially reaching behind her back to fasten her bra. Over the next few weeks, the pain worsens, particularly at night. Simple tasks like combing her hair or putting on a jacket become difficult due to limited movement. Recalling a fall, Sarah worries she might have injured herself more seriously. She decides to visit her Doctor who after performing a battery of test informs her she has adhesive capsulitis of her shoulder joint and refers her to the

physiotherapist for further management. Discuss adhesive capsulitis under the following headings (20 Marks)

- i. Definition (1Mark)
- ii. Etiology (1 Marks)
- iii. Risk factors (2 Marks)
- iv. Clinical features (2 Marks)
- v. Physiotherapy objective examination (6 Marks)
- vi. Special test (3 Marks)
- vii. Short term goals (3 Marks)
- viii. Long term goals (2 Marks)

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