



(University of Choice)

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

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS**

**2023/2024 ACADEMIC YEAR**

**FIRST TRIMESTER EXAMINATIONS**

**FOR THE DEGREE**

**OF**

**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**

**COURSE CODE: BSP 317/HPT 216**

**COURSE TITLE: KINESIOLOGY**

**DATE: WEDNESDAY 6<sup>TH</sup> DECEMBER 2023**

**TIME: 8:00AM TO 10:00AM**

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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 4 Printed Pages. Please Turn Over.**

## SECTION A: MULTIPLE CHOICE QUESTIONS

(20 marks)

- 1) There are 10 structures within the carpal tunnel: the median nerve and nine tendons (four flexor digitorum superficialis [FDS], four flexor digitorum profundus [FDP], and the flexor pollicis longus [FPL]). Which tendon is the most radial and which tendons are the most dorsal?
  - A. Radial: FPL; dorsal: FDP
  - B. Radial: FPL; dorsal: FDS
  - C. Radial: FDS; dorsal: FDP
  - D. Radial: FDP; dorsal: FPL
- 2) The most common level of cervical disc herniation is between C5 and C6. Which nerve root would be compressed? Think about a physical examination finding for an affected patient.
  - A. C4
  - B. C5
  - C. C6
  - D. C7
- 3) Movements requiring maximum accuracy or involving loads are usually
  - A. Sequential in nature
  - B. Simultaneous in nature
  - C. Segmental in nature
  - D. Concurrent in nature
- 4) All of the following are factors in range of motion EXCEPT
  - A. Joint structure
  - B. Muscle bulk
  - C. Ligamentous structures
  - D. Segment length
- 5) Which of the following categories of motion is mutually exclusive with each of the others?
  - A. Translational motion
  - B. Rectilinear motion
  - C. Rotational motion
  - D. Curvilinear motion
- 6) A wheelbarrow is an example of which class of lever?
  - A. 1st class
  - B. 2nd class
  - C. 3rd class
  - D. 4th class
- 7) What does the center of gravity of an object represent?
  - A. The exact center anatomically
  - B. The geometric center
  - C. The center of the mass of body
  - D. The center of the base of support
- 8) The perpendicular distance between the line of force and the axis defines
  - A. Moment arm
  - B. Torque
  - C. Fulcrum
  - D. vector
- 9) Which of the following is the primary stabilizer of the longitudinal arch?
  - A. Plantar fascia
  - B. Intrinsic musculature
  - C. Bony architecture of the midfoot (Roman arch)
  - D. Interosseous ligaments
  - E. Dorsal ligament

- 19) A person is bringing an eating utensil to the mouth using elbow flexion. In which plane and around which axis does this elbow motion primarily occur?
- A. Transverse plane around a sagittal axis
  - B. Sagittal plane around a frontal axis
  - C. Frontal plane around a sagittal axis
  - D. Horizontal plane around a vertical axis
- 20) Which of the following examples BEST describes linear motion?
- A. Lower limb moving around knee joint axis during knee extension
  - B. Displacement of the center of mass during walking
  - C. Hand bringing food to the mouth during eating
  - D. Gliding motion between the surfaces of two joints

**SECTION B: SHORT ANSWER QUESTIONS**

**(40 MARKS)**

- 1) Give examples of joints classified as Biaxial:
- 2) Discuss the factors contributing to stability and instability of the GH joint
- 3) Describe the planes of motion and axes of rotation for the joints of the elbow and the forearm complex
- 4) Contrast and compare walking and running cycles
- 5) Outline the factors that contribute to unsafe lifting techniques
- 6) Describe the kinematic strategies used to produce different functional motions at the hip
- 7) Describe the factors that contribute to excessive lateral tracking of the patella
- 8) Identify motions of the TMJ

**SECTION C: LONG ANSWER QUESTIONS**

**(40 Marks)**

- 1) Mr. Kalisa is a recovering stroke patient. He is in stage 3 of recovery; you note that his affected hand cannot grip
  - a. Outline the intrinsic muscles and extrinsic muscles of the hand (8 marks)
  - b. Relate and describe the expected possible grips associated with each muscle group on recover
- 2) Collaborate the different gait deviations with their unique structural dysfunction

- 10) Which of the following is true of the existence of motion during a "stationary" stance?
- There is no motion.
  - There is slight motion forward and backward.
  - There is slight motion side to side.
  - There is slight motion in all directions.
- 11) Why is it easier for a runner to move the recovery leg forward more rapidly when it is flexed than when it is extended?
- The mass of the leg is greater when it is flexed.
  - The mass of the leg is less when it is flexed.
  - The moment of inertia of the leg is greater when it is flexed.
  - The moment of inertia of the leg is less when it is flexed.
- 12) A dynamometer measures
- Velocity
  - Acceleration
  - Force
  - Pressure
- 13) All of the following are examples of sagittal plane movements EXCEPT
- Lateral flexion
  - Flexion
  - Hyperextension
  - Plantar flexion
- 14) Dysfunction of the posterior tibial tendon compromises heel rise secondary to failure of which of the following?
- Eversion of the hindfoot that unlocks the transvers tarsal joints
  - Inversion of the hindfoot that unlocks the transversal tarsal joints
  - Eversion of the hindfoot that locks the transverse tarsal joints
  - Inversion of the hindfoot that locks the transverse tarsal joints
- 15) Compressive injury to the peroneal division of the sciatic nerve can occur during total hip arthroplasty. Which thigh muscle would be affected?
- Rectus femoris
  - Vastus lateralis
  - Biceps femoris, long head
  - Biceps femoris, short head
  - Sartorius
- 16) Which of the following is the factor most likely to contribute to joint reaction force?
- Specific limb gravity
  - Joint deformity
  - Muscle contraction about the joint
  - Joint contact area
  - Ligamentous tension about the joint
- 17) Which of the following is not included in the contents of the carpal tunnel?
- Flexor pollicis longus tendon
  - Flexor digitorum superficialis tendons
  - Flexor digitorum profundus tendons
  - Median nerve
  - Flexor carpi radialis tendon
- 18) Which of the following extensor mechanism structures links digital DIP and PIP extension?
- Sagittal band
  - Central slip
  - Oblique retinacular ligament
  - Transverse retinacular ligament
  - Lateral band