

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2014/2015**

**YEAR II TRIMESTER II EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN PHYSIOTHERAPY**

# IPT 2230: MOVEMENT SCIENCE II

**DATE: APRIL, 2015 TIME: 3 HOURS**

**SECTION A (MCQ’S) – 30 MARKS**

1. The trochlear surface articulates with the calcaneus to form

1. Ankle front
2. Subtalar joint
3. Trochlear-calcaneous joint
4. Calcaucal-talus joint

2. The leg is formed to the foot by:

1. Tarsal bones
2. Metatarsal bones
3. Medial and lateral malleoli
4. Phalanges

3. The head and neck of the talus contribute to:

1. Transverse arch of the foot
2. Lateral longitudinal arch of the foot
3. Medial longitudinal arch of the foot
4. None of the above

4. The calcaneus tarsal bone functionally:

1. Sustains large impact forces at heel contact in locomotion
2. Provides long movement arm for the achilles tendon
3. Transmits body weight from hind foot to the forefoot
4. All of the above

5. The talocrural joint is formed by the articulation of:

1. Trochlear surface of talus and plafond surface of tibia
2. Trochlear surface of calcaneus and both malleoli
3. Dome of talus and the three facets on the dorsal surface of the calcaneous
4. Trochlear surface sides of talus with the both malleoli

6. Human beings are able to pivot on one foot smoothly as they walk through

1. Subtalar joint
2. Talocrural joint
3. Talo-navicular joint
4. Distal tibiofibular joint

7. The claw and hammer toe deformity is characterized by:

1. Hyper-extension of metatarsophalayeal joint
2. Flexion of interphalangeal jts of toes
3. Pushing distally of plantarplate which causes pain during weight bearing
4. All of the above

8. Diminished medial longitudinal arch results to:

1. Pes plans deformity
2. Pes cavus deformity
3. Pes calcaneous deformity
4. Pes varus

9. Anterior draw sign is positive when:

1. The tibia slides forward from under the femur when drawn towards you
2. The tibia slides forward from under the femur a few more degrees than on the opposite side when drawn towards you
3. The tibia slides backward on the femur when pushed away from you
4. The tibia slides backward a few more degrees than on the opposite side when pushed away from you

10. Which of the following is correct about Appley’s distraction test.

1. It is a test used to and in the diagnosis of a torn posterior meniscus
2. It is a test used to and in the diagnosis of torn anterior meniscus
3. It is a test used to distinguish between the meniccal and legamenus tear
4. It ist a test used to distinguish between the posterior and anterior meniscal tear

11. The primary functions of the knee joint in relation to movement is:

1. To lengthen and shorten the limb so as to assist the hip in positioning the foot
2. To absorb reaction forces from the hip joint
3. Weight bearing
4. All of the above

12. Which of the following is the most correct primary function of the patella bone in relation to movement:

1. To form patellofemoral joint
2. To protect the quodirceps tendon
3. To increase the moment arm of the quadriceps tendon
4. To protect the articular cartilage from excessive friction from the femur during knee flexion

13. Which of the following factor reduces stress force applied in the knee during ambulation:

1. The menisci
2. The articular cartilage
3. The congruence of articular surfaces
4. All of the above

14. The knee forms a normal cycle of about 170o- 175o on its lateral side. The excessive variation of this cycle can result to:

1. Genuval recurvatum
2. Genu varum
3. Coxa vara
4. Retroversion

15. Rotation of the knee is maximally restricted in full extension of the knee by:

1. Passive tension in the stretched ligaments
2. Passive tension in some parts of the capsule
3. Increased bony congruity within the joint
4. All of the above

16. Which of the following statements correctly supports the assertion that “psoas major muscle contraction increases low back pain.”

1. The muscle contraction applies comprehensive loads to the lumbar spine than to flex or extend it
2. The muscle is a lateral flexor of the trunk
3. The muscle contracts concentrically to flex trunk from suprine position
4. The muscle has a large cross-sectional area making it a strong hip flexor

17. Tightness/contracture of iliopsoas muscle results to:

1. Reduced hip extension
2. Anterior pelvic tild in standing position
3. Forward lean posture when spine is inflexible
4. All of the above

18. What is the significance of the attachment of the gluteus minimus muscle to the hip joint capsule?

1. To increase stability of the hip joint
2. To protect the capsule from impingement during active hip abduction
3. To protect the gluteus minimus muscle tendon from impingement by greater trochanter during active hip abduction
4. To reinforce the hip joint capsule in enhancing congruence of the joint

19. Which of the following is correct about weakness of the hip abductor muscle?

1. Causes gluteus medius limb gait
2. Causes instability and subject is at risk of falling
3. Causes pelvis to drop on the unsupported side
4. All of the above

20. Which of the following is the correct test for piriformis syndrome

1. Hip flexion, adduction & medial rotation resulting to pain with clicking sound
2. Hip flexion, abduction and medial rotation, resulting to pain with clicking sound
3. Hip flexion adduction and medial rotation resulting to pain
4. Hip flexion adduction and lateral rotation resulting to pain

21. Tightness of Rectus femoris muscle can be tested by:

1. Placing patient in prone, hip extended and in neutral position, flex the knee
2. Placing patient in prone, hip extended and in an abduction, flex the knee
3. Placing patient in side-lying affected side uppermost, hip extended and in adduction, flex the knee
4. None of the above

22. Which of the following is not a functional activity of quadriceps muscle

1. Climbing a bicycle
2. Climbing stairs
3. Lowering the body weight
4. Getting in and out of the chair

23. Weakness of the hamstring muscle in erect posture produces little disability because:

1. Knee flexion in erect posture is often due to superimposed weight and controlled by an eccentric contraction of the quadriceps feurooris muscle
2. Knee flexion in erect posture is due to controlled concerntric contraction of the hamstring muscles
3. Knee flexion in erect posture is due to the superimposed weight of the head, arms and trunk
4. Knee flexion in erect posture is due to controlled isokinetic contraction of the quadriceps feuoris muscle

24. Test to determine the tightness/contracture of the tensor fascial latae can be compromised by:

1. Lateral rotation of the hip joint
2. Extension of the hip joint
3. Medial rotation of the hip joint
4. Lateral rotation of the hip joint with knee extended

25. Which of the following is correct about femoral torsion.

1. It is relative rotation between the shaft femur and neck femur
2. It is the angle of inclination between the shat femur and neck femur
3. It is manifested by the degree of in-toeing or out-toeing
4. A & C are correct

26. Plica syndrome is:

1. Calcification of the plicae folds of the synovial layer of the articular capsule of the knee joint
2. Calcification of the fibrous layer of the articular capsule of the knee joint
3. Fibrosis of the fibrous layer of the articular capsule of the knee joint
4. Calcification of the plicae folds of the articular capsule of the knee joint

27. Which of the following muscles comprise the rotator cuff muscle group of the shoulder

1. Infraspinatus, subscapularits, teres major
2. Supraspinatus, subscapilnts, teres, major infraspimatus
3. Subscaplans, infraspimatus, teres minor, suprapsinatus
4. Teres minor, supraspinatus, infraspmatus, coracobrachialis

28. What motions are permitted at metacarpophalarngeal joints?

1. Flexion, extension, abduction, adduction, rotation
2. Flexion, extension, abduction, adduction, circumduction
3. Flexion, extension, rotation, circumduction
4. Flexion, extension, abduction, adduction

29. The shoulder complex is composed of the following joints:

1. Glenohumeral, sternoclaviccular, acromioclavicular and sterno humeral joints.
2. Glenohumeral, acromioclavicular, scapulothoracic, and sterohumeral joints
3. Glenohumeral, scapulotharacic, acromioclavicular, and sternoclavicular
4. Glenohumeral, sternohumeral, acromioclavicular

30. Which of the following movements occur in the glenohumeral joint?

1. Flexion/extension, abduction/adduction, internal/external rotation
2. Flexion/extension, abduction/adduction, internal/external rotation, elevation/depression
3. Flexion/extension, protraction/retraction, circumduction, rotation

**SECTION B – 20 MARKS**

1. In a normal erect posture the head fermur is anteriorly and superiorly directed in articulation acetabulum. Explain the importance of this orientation in relation to ambulation. [4 marks]

2. a) Describe how you will physically test for shortening of rectus femoris muscle. [4 marks]

 b) Identify the movement which is likely to compromise this test. [1 mark]

3. a) Rotation of the knee is maximally restricted in full extension. Give two reasons to

support this statement. [2 marks]

b) Briefly explain why the medial meniscus is more frequently injured than the lateral one. [2 marks]

4. a) Most ankle sprains occur with the foot in inversion. Name the most commonly

injured ligament. [1 mark]

b) Planter aponeurosis is the deep part of the plantar fascia and possess remarkable tensile strength. Justify why plantar fascia surgical release to relieve pain should be tried last. [3 marks]

5. a) Briefly explain the types of forces sustained by the fenural neck during weight

bearing in erect standing position. [4 marks]

**SECTION C – 20 Marks**

1. Metatarsophalanged (MTP) joints of the foot are crucial during ambulation.

a) Name three structures that support these joints. [6 marks]

b) Name two functional movements which utilize hyperextension of the MTP joints.

[4 marks]

c) Briefly explain why patients experience pain during weight bearing in a claw& hammer toe deformity of the toes. [8 marks]

d) Which movements is limited in Hallux rigidus deformity. [2 marks]