



SUPPLEMENTARY EXAMINATION

PROGRAM : HUMAN MOVEMENT STUDIES

MODULE NAME : KINESIOLOGY

MODULE CODE : KIN01A1 / MBK1A01 / MBK1A02 / BIK01Y1 (FIRST SEMESTER)

DATE : 20 JULY 2017

DURATION : TWO (2) HOURS

TOTAL MARKS : 100 MARKS

EXAMINER : MRS FERREIRA

MODERATOR : PROF LATEGAN

NUMBER OF PAGES : NINE (9) PAGES

INSTRUCTIONS TO CANDIDATES:

PLEASE MAKE SURE THAT YOU HAVE THE COMPLETE PAPER
AND PLEASE ANSWER ALL THE QUESTIONS.
SECTION A: SKELETAL & MUSCULAR SYSTEMS
SECTION B: BIOMECHANICS

SECTION A: SKELETAL & MUSCULAR SYSTEM (50 MARKS)

QUESTION 1

[6 x ½=3]

Name and explain the three (3) categories of joints.

QUESTION 2: Please provide the correct answer

[10]

2.1 The term SUPERFICIAL refers to:

- a) Near the surface
- b) Below in relation to another structure
- c) Beneath or below the surface

2.2 BILATERAL is a term used to refer to:

- a) Opposite side of the body
- b) Same side of the body
- c) Both sides of the body

2.3 Identify the plane of motion during FOREARM SUPINATION.

- a) Frontal plane
- b) Sagittal plane
- c) Transverse plane

2.4 Identify the plane of motion in which SIT UPS take place.

- a) Frontal plane
- b) Sagittal plane
- c) Transverse plane

2.5 Identify the axis of rotation around which RUSSIAN TWISTS take place.

- a) Vertical axis
- b) Anterior-posterior axis
- c) Frontal/lateral axis

2.6 Identify the axis of rotation around which HIP ABDUCTION takes place.

- a) Vertical axis
- b) Anterior-posterior axis
- c) Frontal/lateral axis

2.7 Which one is NOT a diarthrodial joint:

- a) Hinge joint
- b) Plane joint
- c) Cranial joint
- d) All of the above

2.8 The RECTUS ABDOMINIS is classified as which muscle fiber type:

- a) Strap muscle
- b) Radiate muscle
- c) Flat muscle

2.9 The UPWARDS PHASE of a bicep curl is a:

- a) Isometric contraction
- b) Concentric contraction
- c) Eccentric contraction

2.10 The five (5) fused vertebrae is:

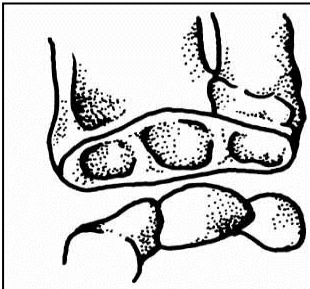
- a) Lumbar
- b) Coccyx
- c) Sacrum

QUESTION 3

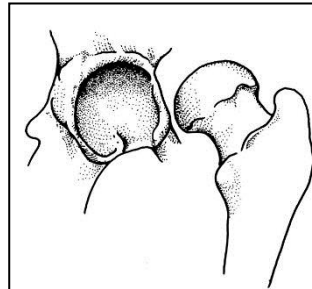
[5]

Refer to the pictures below and name each joint.

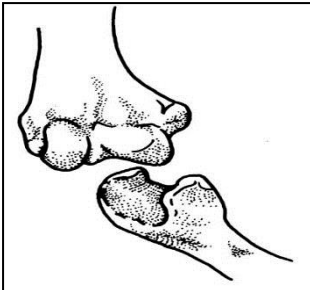
3.1



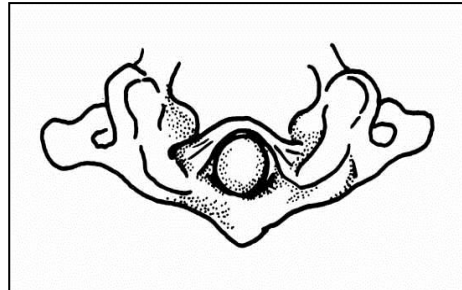
3.2



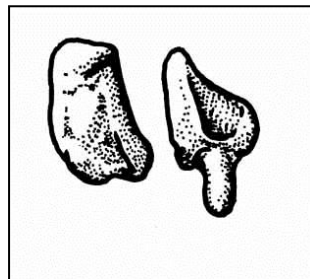
3.3



3.4



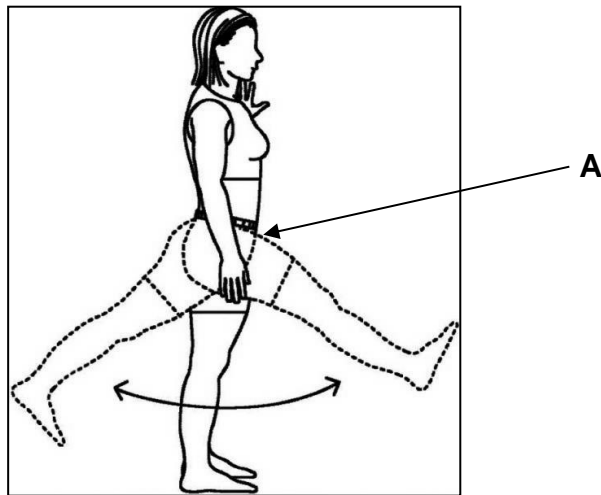
3.5



QUESTION 4

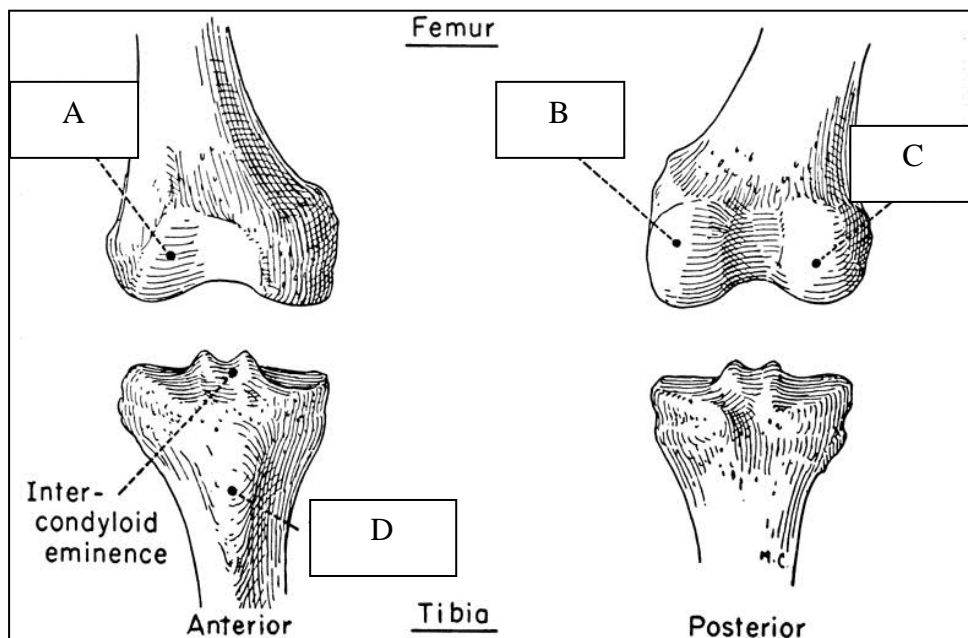
[4]

Identify the movement (A) and list two (2) muscles that contract **CONCENTRICALLY** during this movement and one (1) muscle that contracts **ECCENTRICALLY**.



QUESTION 5: Please label the following bone markings A-D

[4]



QUESTION 6

[4]

Describe the origin and insertion of the following muscles:

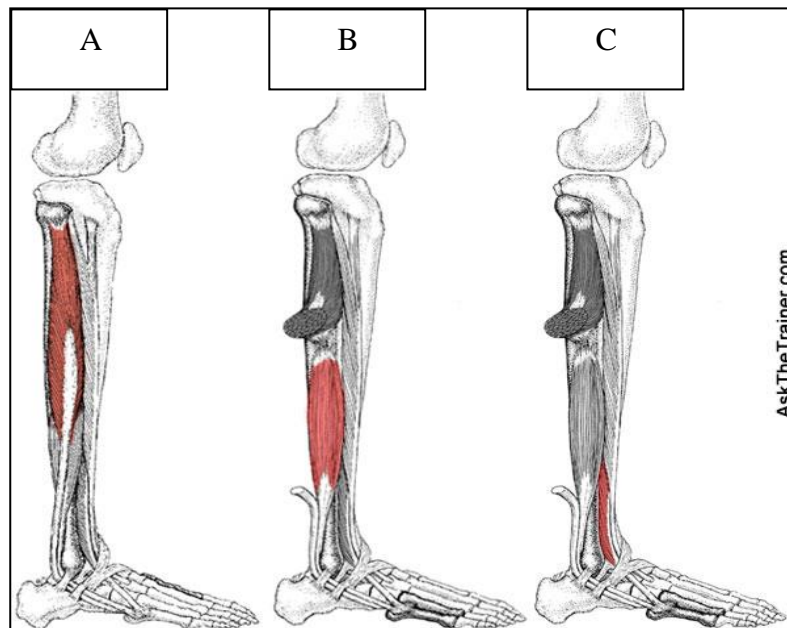
- Anterior Deltoid
- Biceps Femoris Long head

QUESTION 7

[6]

Identify the different curves of the spinal column as well as the amount of vertebrae in each curve.

QUESTION 8: Name the following lateral leg muscles and give the function of each. [6]



QUESTION 9

[3]

Name three (3) muscles that directly move the scapula.

QUESTION 10

[5]

Give the function of the following muscles:

- a) Upper trapezius
- b) Posterior Deltoid
- c) Vastus medialis oblique
- d) Soleus
- e) Biceps Femoris

SECTION A TOTAL: 50 MARKS

SECTION B: BIOMECHANICS (50 MARKS)**QUESTION 1****[4]**

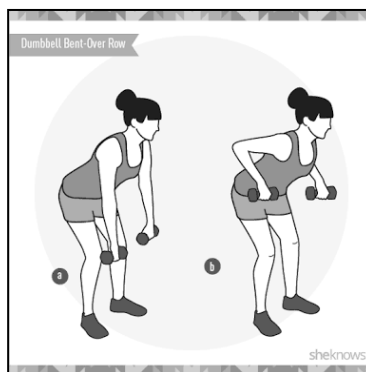
Describe the following concepts and give an appropriate example:

1.1 Plyometric contraction

1.2 Open-kinetic chain contraction

QUESTION 2**[15]**

Analyse the **Dumbbell bent-over row** by means of an anatomical analysis. Use the table format below to describe the movement in terms of agonistic muscles for the following joints: elbow joint (EJ) and gleno-humeral joint (GHJ).



Phase:	Joint:	Movement:	Agonistic muscles:	Type of contraction:
Up /	EJ			Con / Ecc
Down	GHJ			

QUESTION 3**[4]**

What is the main goal of:

3.1 Synchronised swimming

3.2 Long jump

3.3 Archery

3.4 100m sprint

QUESTION 4**[5]**

Describe the following postural deviations:

4.1 Duck Feet

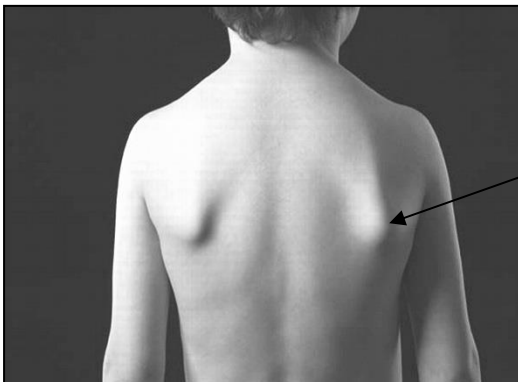
- 4.2 Genu valgum
- 4.3 Anterior pelvic tilt
- 4.4 Pes planus
- 4.5 Thoracic kyphosis
- 4.6 Winging scapula

QUESTION 5

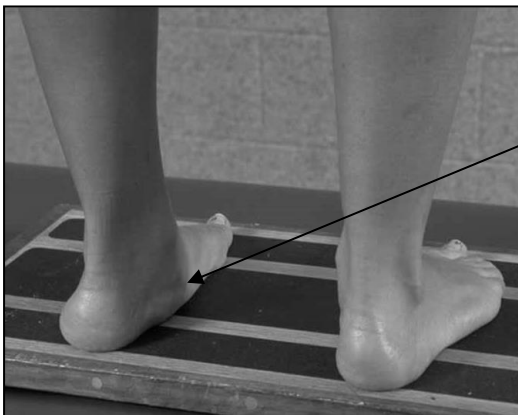
[3]

Identify the following postural deviations.

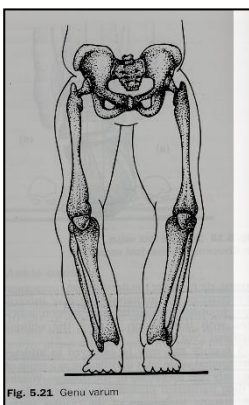
5.1



5.2



5.3



QUESTION 6

[2]

Calculate the distance in metres that the shot put travels if it takes 30 seconds at an average velocity of 3m/s to land.

QUESTION 7

[2]

Determine the kinetic energy of a brick weighing 2.5kg and travelling at 20km/h.

QUESTION 8

[2]

Determine the height from which a weight was dropped if it took 35 seconds to hit the ground (you may ignore the effects of air resistance).

QUESTION 9

[4]

Determine the extra amount of work generated by a person with a height of 1.6m and weighing 72kg, lifting 25 dumbbells weighing 5kg each from the ground to a shelf 1.5m above the ground.

QUESTION 10

[3]

A long jumper jumps at an angle of 35° at a velocity of 40m/s. Calculate the horizontal velocity of the long jumper.

QUESTION 11

[2]

Calculate the force needed to generate 580Nm of torque using a lever 29cm in length.

QUESTION 12

[4]

Calculate the power generated by a individual who performs 12 repetitions of a squat with added weight of 120kg in 20 seconds; the weight is lifted 60cm from the starting position.

SECTION B TOTAL: 50 MARKS

SECTION A & B TOTAL: 100 MARKS

Formulas

$$v = s/t \quad \text{velocity} = \text{displacement} / \text{time}$$

$$a = (v-u)/t \quad \text{acceleration} = (\text{final vel.} - \text{initial vel.})/\text{time}$$

$$s = ut + \frac{1}{2}at^2$$

$$v = u + at$$

$$v^2 = u^2 + 2as$$

Where: u = initial velocity, v = final velocity, t = time and a = acceleration

$$F = ma \quad \text{Force} = \text{mass} \times \text{acceleration}$$

$$Ft = m(v - u) \quad \text{Impulse} = \text{mass} (\text{final velocity} - \text{initial velocity})$$

$$W = Fs \quad \text{Work} = \text{Force} \times \text{distance}$$

$$P = W/t \quad \text{Power} = \text{Work} / \text{time}$$

$$PE = mgh \quad \text{Potential Energy} = \text{mass} \times \text{gravity} \times \text{height}$$

$$KE = \frac{1}{2}mv^2 \quad \text{Kinetic Energy} = \frac{1}{2} \times \text{mass} \times (\text{velocity})^2$$

$$M = mv \quad \text{Momentum} = \text{mass} \times \text{velocity}$$

$$E \times EA = R \times RA \quad \text{Effort} \times \text{Effort arm} = \text{Resistance} \times \text{Resistance arm}$$

$$MA = R/E \quad \text{Mechanical Advantage} = \text{Resistance} / \text{Effort}$$

$$T = F \times \perp d \quad \text{Torque} = \text{Force} \times \text{perpendicular distance}$$