Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-09-05, 23:59 IST.

1) The scientific study of the measurements of the human body is known as _____________ 1 point
   - Physiology
   - Anatomy
   - Anthropometry
   - Kinesiology

No, the answer is incorrect.
Score: 0
Accepted Answers:
Anthropometry

2) Anthropometric data consists of
   1 point
   - Body segmental masses
   - Body segmental lengths
   - Centre of mass locations of body segments
   - Body segmental shapes

No, the answer is incorrect.
Score: 0
Accepted Answers:
Body segmental masses
Body segmental lengths
Centre of mass locations of body segments

3) The head being tipped backwards on the atlas is an example of _______ class lever in action
   1 point
4) The number of thoracic vertebra in the spinal column is:  
- 12  
- 7  
- 5  
- 1  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
- 12  

5) While analysing the skull with the following planar force system: the joint force at the atlantooccipital joint, muscle force of the neck extensor and the weight of the skull, the forces form a ______ system of vectors  
- Concurrent  
- Collinear  
- Coplanar  
- Non-concurrent  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
- Concurrent  
- Coplanar  

6) Use the adjacent diagram to answer questions 6-7  

![Diagram of a skull with forces](image_url)

The tension in the neck extensor \( (F_m) \) for the configuration shown is _________  
- 43.1N  
- 27.4 N  
- 35.3 N  
- 12.8 N  

No, the answer is incorrect.
7) The joint force at the atlantooccipital joint for this configuration is

- 91.8 N
- 52 N
- 154 N
- 35.3 N

No, the answer is incorrect.

Score: 0
Accepted Answers:
91.8 N

8) Use this information for questions 8-11.

A person (of body weight \( W_B \) and height \( H_B \)) is lifting a load \( W_L = 0.3W_B \) in three different ways as shown in the figure below. To determine the best way of lifting, you have to do a static analysis of the spine to study the loads on it. Assume the following:

i. Length of trunk = 0.3\( H_B \)
ii. Mass of trunk = 0.36\( W_B \)
iii. Mass of head and arms = 0.18\( W_B \)
iv. Centre of mass of trunk from distal end = 0.15\( H_B \)
v. Point of action of muscle force from the distal end = 0.2\( H_B \)
vi. The erector spinae is the only muscle acting on the spine at an orientation at 13° to the spine

If the thoracolumbar spine is inclined at an angle \( \theta = 35° \) for the first case, the force exerted by erector spinae will be

- 3.6\( W_B \)
- 2.09\( W_B \)
- 4.5\( W_B \)
- 1.4\( W_B \)

No, the answer is incorrect.
9) The person is lifting a load of $0.3W_B$ with the legs, as in the second case, such that the thoracolumbar spine is now inclined at an angle $\theta = 75^\circ$. The force exerted by erector spinae will now be

- $0.77W_B$
- $1.14W_B$
- $3.21W_B$
- $4.56W_B$

No, the answer is incorrect.

Score: 0
Accepted Answers: $3.6W_B$

10) The person is now lifting a load of $0.3W_B$, which has been divided into two loads of $0.15W_B$ each. In this case, the thoracolumbar spine is inclined at an angle, $\theta = 85^\circ$. The force exerted by erector spinae will be

- $1.44W_B$
- $4.56W_B$
- $0.38W_B$
- $2.09W_B$

No, the answer is incorrect.

Score: 0
Accepted Answers: $1.14W_B$

11) Which of the following conditions is/are the safest for the spine while lifting the load?  

- Lifting with a bent back
- Lifting with an erect back
- Lifting without handles
- Dividing the load and lifting with both hands

No, the answer is incorrect.

Score: 0
Accepted Answers: Lifting with an erect back, Dividing the load and lifting with both hands

12) Which of the following motions can be performed by the shoulder joint?  

- Abduction
Eversion
Internal rotation
Adduction

No, the answer is incorrect.
Score: 0

Accepted Answers:
Abduction
Internal rotation
Adduction