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CHAPTER 2 Biomechanics

Multiple Choice

Select the one best choice that completes the statement or answers the question.

1. Motion created by forces that incorporates factors of time, space, and mass of a moving system is described by which term?
a. Osteokinematics
b. Biomechanics
c. Mechanics
d. Kinematics

2. Shear forces occurring within a joint are:
a. Rolling
b. Gliding
c. Traction
d. Compression

3. A force that is not applied perpendicular to a limb segment produces a rotatory force and:
a. Bending
b. Force couple
c. Traction or compression
d. Shear or torsion

4. A scalar quantity describes what characteristic(s) of an object?
a. Velocity
b. Distance
c. Direction
d. Magnitude

5. A moment arm (MA) is the perpendicular distance between the application of a force and the:
a. Resistance
b. Axis
c. Magnitude
d. Pulley

6. Putting a wheelchair in motion, the individual must overcome which of Newton's laws of motion?
a. Law of action-reaction
b. Law of acceleration
c. Law of inertia
d. None of the above

7. When an object bends, which force occurs on the convex side?
a. Linear
b. Traction
c. Compression
d. Concurrent

8. A force that pushes body segments together creates:
a. Traction
b. Mobility
c. Distraction
d. Compression

9. A vector describes:
a. Speed and scalar
b. Area and mass
c. Mass and volume
d. Magnitude and direction

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10. The upward force a supporting surface exerts on an individual when the individual pushes down on the supporting surface is termed:

a. Ground reaction force
b. Counter force
c. Approximation
d. Friction

11. An individual is performing a push-up, and in the up position only the balls of his feet and his palm and fingers are in contact with the floor. What area is the base of support (BOS)?

a. Area under balls of feet to top of head
b. Surface of body in contact with BOS in down position
c. Area between balls of feet to palms
d. Only area of balls of feet and palms

12. What is the effect of moving the line of gravity (LOG) to the edge of the base of support (BOS)?

a. Increased stability
b. Increased mobility
c. No change in mobility
d. Decreased stability

13. The vector that represents the sum of the magnitude and directions of each individual vector is the:

a. Resultant force
b. Linear force
c. Parallel force
d. Curvilinear force

14. Increasing the length of the force arm results in:

a. Less resistance for the force to move
b. More resistance for the force to move
c. Less force needed to move resistance
d. More force needed to move resistance

15. Forces in the same plane and in the same or opposite directions are:

a. Parallel forces
b. Angular forces
c. Perpendicular forces
d. Concurrent forces

16. Stability is increased by:

a. Increasing the base of support (BOS) and raising the center of mass (COM)
b. Narrowing the BOS and lowering the COM
c. Increasing the BOS and lowering the COM
d. Narrowing the BOS and raising the COM

17. When resistance is between the axis and the force, which class of lever is created?

a. First
b. Second
c. Third
d. None

18. Which motion do torsional forces create in a bone?

a. Traction
b. Twisting
c. Compression
d. Rotation

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19. A force couple is when muscles act together to produce:
a. Clockwise or counterclockwise rotation
b. Clockwise or perpendicular rotation
c. Counterclockwise or perpendicular rotation
d. None of the above

20. When muscle tendons pass under a tuberosity of a bone resulting in a change in direction of the tendon, the tuberosity is acting as a/an:
a. Inclined plane
b. Axle
c. Lever
d. Pulley

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CHAPTER 2 Biomechanics
Answer Section

1. ANS: D
2. ANS: B
3. ANS: C
4. ANS: D
5. ANS: B
6. ANS: C
7. ANS: B
8. ANS: D
9. ANS: D
10. ANS: A
11. ANS: C
12. ANS: D
13. ANS: A
14. ANS: C
15. ANS: A
16. ANS: C
17. ANS: B
18. ANS: B
19. ANS: A
20. ANS: D

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