

BIOMECHANICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE

<https://biomech.examzify.com>



Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

SAMPLE

Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

SAMPLE

1. The cardinal transverse plane divides the body into equal _____.
 - A. Right and left halves
 - B. Top and bottom halves
 - C. Medial and lateral halves
 - D. Front and back halves
2. How do bones typically respond to decreased regular loading due to inactivity?
 - A. Decreased length
 - B. Hypertrophy
 - C. Increased length
 - D. Atrophy
3. Which of the following is not one of the five joints that comprise the shoulder girdle?
 - A. Acromioclavicular
 - B. Sternoclavicular
 - C. Glenohumeral
 - D. Humeroulnar
4. Which type of muscle contraction occurs when a muscle shortens while generating force?
 - A. Eccentric contraction
 - B. Isometric contraction
 - C. Isotonic contraction
 - D. Static contraction
5. What is the name of the joint where the humerus connects with the proximal end of the ulna?
 - A. Humeroulnar joint
 - B. Glenohumeral joint
 - C. Humeroradial joint
 - D. Sternoclavicular joint

- 6. What does the term "kinetics" primarily focus on in biomechanics?**
- A. The effects of forces on the state of motion
 - B. The speed and direction of moving objects
 - C. The appearance of motion without forces
 - D. The shape and size of the body in motion
- 7. What is meant by "angular velocity"?**
- A. The speed of linear motion
 - B. The rate of force application
 - C. The rate of change of linear displacement
 - D. The rate of change of angular displacement over time
- 8. The human elbow during flexion is an example of which class of lever?**
- A. 1st class
 - B. 2nd class
 - C. Single
 - D. 3rd class
- 9. If velocity is constant, then acceleration is what?**
- A. Changing
 - B. Zero
 - C. Constant, but not zero
 - D. Negative
- 10. Force is directly proportional to which quantity?**
- A. Weight
 - B. Acceleration
 - C. Velocity
 - D. Momentum

Answers

SAMPLE

1. B
2. D
3. D
4. C
5. A
6. A
7. D
8. D
9. B
10. B

SAMPLE

Explanations

SAMPLE

1. The cardinal transverse plane divides the body into equal _____.

- A. Right and left halves
- B. Top and bottom halves**
- C. Medial and lateral halves
- D. Front and back halves

The cardinal transverse plane is a fundamental anatomical plane that divides the body into upper and lower sections. When examining how this plane functions, it is important to understand the orientation it provides. Specifically, the transverse plane runs horizontally through the body, creating a sectional view that separates the body into superior (top) and inferior (bottom) portions. This distinction is essential in biomechanics and anatomical studies, as it helps in understanding movements that occur around the transverse plane, such as rotation. It becomes clear that option B accurately reflects this division, as it precisely describes the relationship between the body's two halves as divided by the transverse plane. Other options do not align with the definition of the transverse plane. The right and left halves refer to the sagittal plane, the medial and lateral terminology describes positions relative to the midline of the body, and the front and back halves correspond to the frontal (or coronal) plane. Thus, the statement provided supports the understanding of body orientation and the classification of anatomical planes.

2. How do bones typically respond to decreased regular loading due to inactivity?

- A. Decreased length
- B. Hypertrophy
- C. Increased length
- D. Atrophy**

Bones respond to decreased regular loading due to inactivity through a process known as atrophy, which refers to the loss of bone mass and density. This occurs because bones are adaptive tissues that require mechanical stress to maintain their strength and structure. When loading is reduced, such as during inactivity or prolonged periods of immobility, the rate of bone resorption (breakdown) exceeds the rate of bone formation. Consequently, the overall density of the bone diminishes, leading to weakness and a higher risk of fractures. Atrophy in bones reflects the body's ability to conserve resources and adapt to changes in physical demands. Inactivity causes a signal that leads to decreased osteoblast activity (which builds bone) and increased osteoclast activity (which resorbs bone), resulting in the thinning and weakening of bone structure. Therefore, the concept of bone atrophy is directly tied to the lack of mechanical loading that stimulates bone maintenance and growth, making it the correct answer in this context.

3. Which of the following is not one of the five joints that comprise the shoulder girdle?

- A. Acromioclavicular
- B. Sternoclavicular
- C. Glenohumeral
- D. Humeroulnar**

The shoulder girdle consists of a series of joints that connect the arm to the body, allowing for a wide range of motion and function. The five primary joints in the shoulder girdle are the acromioclavicular joint, the sternoclavicular joint, the glenohumeral joint, and the scapulothoracic joint, among others that assist in stability and movement. The humeroulnar joint, however, is not part of the shoulder girdle. Instead, it is a hinge joint located in the elbow region, where the humerus of the upper arm meets the ulna of the forearm. This joint primarily facilitates flexion and extension of the elbow, contributing to movements of the forearm rather than the shoulder. In contrast, the other joints listed, such as the acromioclavicular, sternoclavicular, and glenohumeral joints, play direct roles in connecting the shoulder to the thoracic skeleton and allowing for complex movements of the upper limb. Thus, identifying the humeroulnar joint as not belonging to the shoulder girdle is accurate, reflecting the distinct anatomical separation between these important regions of the upper body.

4. Which type of muscle contraction occurs when a muscle shortens while generating force?

- A. Eccentric contraction
- B. Isometric contraction
- C. Isotonic contraction**
- D. Static contraction

The correct answer identifies isotonic contraction, characterized by the muscle generating force while changing length, specifically shortening. This type of contraction is essential for various movements, particularly in activities such as lifting weights or performing daily tasks where muscles need to contract and shorten to create motion. During isotonic contraction, two primary phases can be observed: concentric and eccentric. In concentric contractions, the muscle actively shortens as it works against resistance, thus generating force. This is the scenario where muscles engage to lift a load or push against resistance. Understanding this type of contraction is crucial for grasping how muscles function during physical activity. The distinction is important because functions such as walking, running, or any dynamic movement rely heavily on concentric phase actions to propel the body forward. The other options involve different types of muscle contraction. Eccentric contraction, for instance, occurs when a muscle lengthens while still producing force, which is critical for controlling movements and stabilizing joints as opposed to shortening. Isometric contraction, on the other hand, involves the muscle generating force without changing its length, as seen in activities such as holding a weight in a fixed position. Static contraction generally refers to a non-movement scenario, aligning closely with isometric activity. In summary,

5. What is the name of the joint where the humerus connects with the proximal end of the ulna?

- A. Humeroulnar joint**
- B. Glenohumeral joint
- C. Humeroradial joint
- D. Sternoclavicular joint

The joint where the humerus connects with the proximal end of the ulna is known as the humeroulnar joint. This anatomical structure is a key component of the elbow joint, allowing for the flexion and extension of the forearm relative to the upper arm. The humeroulnar joint specifically involves the trochlea of the humerus articulating with the trochlear notch of the ulna, forming a hinge joint that permits movement primarily in one plane. This joint is vital for various activities, including lifting and throwing, as it enables the range of motion required for elbow movement. Its design as a hinge joint allows for effective articulation while stabilizing the connection between the upper and lower parts of the arm during these movements. Understanding the functional role of the humeroulnar joint is essential in biomechanics, particularly when analyzing movements that involve elbow flexion and extension.

6. What does the term "kinetics" primarily focus on in biomechanics?

- A. The effects of forces on the state of motion**
- B. The speed and direction of moving objects
- C. The appearance of motion without forces
- D. The shape and size of the body in motion

The term "kinetics" in biomechanics primarily focuses on the effects of forces on the state of motion. This area of study analyzes how various forces such as muscular, gravitational, and frictional forces influence bodies in motion. Kinetics looks into how these forces cause changes in motion, including acceleration and deceleration, and helps in understanding the underlying principles of movement. In this context, understanding the role of forces is crucial for assessing performance in sports, designing rehabilitation protocols, and enhancing movement efficiency. By examining how forces interact with a body in motion, biomechanics professionals can derive insights into injury prevention and performance optimization. Additionally, this focus on forces can lead to better designs for equipment and gear that may aid in athletic performance or assistive technologies.

7. What is meant by "angular velocity"?

- A. The speed of linear motion
- B. The rate of force application
- C. The rate of change of linear displacement
- D. The rate of change of angular displacement over time**

Angular velocity refers to the rate at which an object rotates around a specific axis, indicating how quickly it is changing its angle of rotation over a given period. This concept is crucial in biomechanics as it helps quantify the rotational dynamics of limbs and joints during movement. In mathematical terms, angular velocity is defined as the change in angular position (or angular displacement) relative to the time taken for that change. This means it provides insight into how fast an object is spinning or turning, measured in radians per second or degrees per second. By understanding angular velocity, biomechanics professionals can analyze movements such as a gymnast performing a routine or an athlete executing a throw, allowing them to assess efficiency and performance in rotational sports.

8. The human elbow during flexion is an example of which class of lever?

- A. 1st class
- B. 2nd class
- C. Single
- D. 3rd class**

The human elbow during flexion is classified as a third-class lever. In a third-class lever, the effort is applied between the fulcrum and the load. For the elbow, the fulcrum is located at the hinge joint (the elbow joint itself), the effort is applied by the muscles of the arm (such as the biceps), and the load is the weight of the forearm and any additional weight being lifted. This configuration allows for a greater range of motion and speed of movement, as the distance from the fulcrum to where the effort is applied is shorter than the distance from the fulcrum to the load. Although this lever type requires more effort to move the load, it provides the advantage of allowing for quick and extensive motions, which are essential for various activities, such as throwing or lifting. In contrast, first-class levers have the fulcrum situated between the effort and the load, second-class levers have the load located between the fulcrum and the effort, and single-class lever is not a standard biomechanical classification used to accurately describe lever systems in the human body. Thus, classifying the human elbow during flexion as a third-class lever is accurate and provides insight into how joint movements

9. If velocity is constant, then acceleration is what?

- A. Changing
- B. Zero**
- C. Constant, but not zero
- D. Negative

When velocity remains constant, it indicates that an object is maintaining a steady speed in a designated direction without any changes. In biomechanics, acceleration is defined as the rate at which an object's velocity changes over time. If there is no change in velocity—meaning the speed and direction remain unchanged—then the acceleration must be zero. This situation can occur in a variety of mechanical systems, including those studied in biomechanics, where steady movement is essential, such as a runner maintaining a constant speed on a track. Understanding that acceleration equals the change in velocity over time aids in grasping why, when velocity does not change, acceleration must indeed be zero. This is a fundamental concept in both physics and biomechanics that helps in analyzing motion effectively.

10. Force is directly proportional to which quantity?

- A. Weight
- B. Acceleration**
- C. Velocity
- D. Momentum

In biomechanics, force is described by Newton's second law of motion, which states that the force acting on an object is equal to the mass of that object multiplied by its acceleration ($F = ma$). This relationship indicates that force is directly proportional to acceleration, assuming mass remains constant. When an object undergoes acceleration due to a force, the amount of force applied dictates how quickly the object will change its velocity. Thus, if you were to increase the acceleration while keeping the mass the same, the force would similarly increase. This fundamental principle forms the basis for understanding motion and dynamics in biomechanics. The relationship of force to other quantities, such as weight, velocity, or momentum, is not direct in the same way. Weight depends on gravitational force acting on mass and is a specific case; it is not a general principle of force. Velocity does not indicate magnitude of force directly, as it is simply a measure of how fast an object is moving. Momentum involves both mass and velocity (momentum = mass $\times$ velocity) and does not express a direct proportional relationship to force without incorporating time or acceleration, making it more complex in this context.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://biomech.examzify.com>

We wish you the very best on your exam journey. You've got this!

SAMPLE