Ivy Tech APHY 101 – Skeletal System Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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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

1. **Hydroxyapatite accounts for about what percentage of bone by mass?**

   A. 65%

   B. 50%

   C. 75%

   D. 60%

2. **The Haversian system is another name for which structural unit?**

   A. Osteon

   B. Lamellae

   C. Canaliculi

   D. Lacunae

3. **Lengthening of long bones ceases when the epiphyseal plate undergoes closure; typical ages: females around 18 years, males around 21 years.**

   A. Epiphyseal plate closure

   B. Periosteal thickening

   C. Medullary cavity expansion

   D. Cartilage calcification

4. **Which cartilage has thick collagen fibers that give great tensile strength and is found in the menisci of the knee, intervertebral discs, and pubic symphysis?**

   A. Fibrocartilage

   B. Hyaline Cartilage

   C. Elastic Cartilage

   D. Articular cartilage

5. **What term completes the statement: 'All skeletal _____ contains chondrocytes in lacunae and extracellular matrix'?**

   A. Cartilage

   B. Bone

   C. Tissue

   D. Connective tissue

6. What term describes the formation and function of canaliculi that allow nutrient and waste exchange between osteocytes?

A. Canaliculi formation and function

B. Lacunae

C. Central canal

D. Osteon

7. What are fontanelles in the fetal skull?

A. Fontanelles are bone plates between skull bones in infants.

B. Fontanelles are cartilaginous joints in the skull.

C. Fontanelles are fibrous connective tissue gaps between skull bones in infants that allow growth of the brain.

D. Fontanelles are air-filled cavities in infants skull.

8. Which term describes a small rounded projection on a bone?

A. Tubercle

B. Tuberosity

C. Epicondyle

D. Spine

9. In endochondral ossification, what invades the internal cavities to form spongy bone?

A. Periosteal bud

B. Osteoclasts

C. Nerve fibers

D. Blood clots

10. Which bones have complex shapes, such as vertebrae and coxal bones?

A. Irregular bones

B. Flat bones

C. Long bones

D. Short bones

Answers

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

Explanations

1. Hydroxyapatite accounts for about what percentage of bone by mass?

A. 65%

B. 50%

C. 75%

D. 60%

Hydroxyapatite forms the main inorganic mineral portion of bone, and this mineral phase accounts for about 65% of bone by mass. Its crystalline calcium phosphate structure fills much of the space between collagen fibers, giving bone its hardness and ability to resist compression. The rest of bone mass comes from the organic matrix—primarily collagen—that provides tensile strength and some flexibility, along with small amounts of water. Because of this dominant mineral content, 65% is the standard figure students memorize for hydroxyapatite's contribution to bone mass.

2. The Haversian system is another name for which structural unit?

A. Osteon

B. Lamellae

C. Canaliculi

D. Lacunae

The Haversian system is the osteon, the basic structural unit of compact bone. An osteon centers on a central canal that houses blood vessels and nerves, and it is surrounded by concentric rings of mineralized bone matrix called lamellae. Within those lamellae lie tiny spaces called lacunae that hold osteocytes, which connect to each other through small channels called canaliculi. Several osteons run parallel to give the dense, compact bone its strength. The other terms—lamellae, canaliculi, and lacunae—are components inside an osteon, not the unit itself.

3. Lengthening of long bones ceases when the epiphyseal plate undergoes closure; typical ages: females around 18 years, males around 21 years.

A. Epiphyseal plate closure

B. Periosteal thickening

C. Medullary cavity expansion

D. Cartilage calcification

Growth in length for long bones happens at the epiphyseal growth plate, where cartilage is continually produced and gradually ossified to add bone length. When the plate closes, the cartilage is fully replaced by bone and a bony line remains, signaling that no more growth in height is possible. This closure is what ends lengthening, which is why the typical ages differ by sex—earlier in females (around 18) and a bit later in males (around 21) due to hormonal puberty timing. Other processes don't halt length growth in the same way. Periosteal thickening adds bone to the outside and increases bone diameter rather than length. Medullary cavity expansion relates to changes inside the shaft during remodeling, not to stopping growth in height. Cartilage calcification is a normal part of turning cartilage into bone, but it's the completion of that process and the formation of the epiphyseal line that ends lengthening.

4. Which cartilage has thick collagen fibers that give great tensile strength and is found in the menisci of the knee, intervertebral discs, and pubic symphysis?

A. Fibrocartilage

B. Hyaline Cartilage

C. Elastic Cartilage

D. Articular cartilage

Tensile strength from dense collagen is the hallmark here. Fibrocartilage contains thick bundles of collagen fibers, mainly type I, arranged in dense, interwoven patterns that resist pulling and tearing. This makes it excellent at withstanding the stresses of weight bearing and bending. That strength is precisely what you need in the knee's menisci, the outer ring of intervertebral discs (annulus fibrosus), and the pubic symphysis, where tissues must endure heavy, multidirectional forces while providing stability. In these locations, the fibrocartilage acts as a tough, shock-absorbing connective tissue with little to no perichondrium and limited vascularity, contributing to its durability and slower healing if damaged. By contrast, hyaline cartilage (found on joint surfaces) emphasizes a smooth, glassy surface with less tensile strength, elastic cartilage provides flexibility due to elastic fibers, and articular cartilage is a type of hyaline cartilage at joints.

5. What term completes the statement: 'All skeletal _____ contains chondrocytes in lacunae and extracellular matrix'?

A. Cartilage

B. Bone

C. Tissue

D. Connective tissue

Chondrocytes in lacunae within a flexible extracellular matrix define cartilage, a key skeletal tissue. In cartilage, the cells live in tiny spaces called lacunae embedded in an ECM rich in proteoglycans and type II collagen, produced by chondroblasts. This tissue is generally avascular, relying on diffusion for nutrients, which helps explain its characteristics and its role in forming joints, the nose, tracheal rings, and other skeletal structures. Bone, for contrast, has osteocytes in lacunae within a mineralized matrix, not chondrocytes, and broad terms like tissue or connective tissue cover many cell types beyond cartilage. So the term that fits the statement is cartilage.

6. What term describes the formation and function of canaliculi that allow nutrient and waste exchange between osteocytes?

A. Canaliculi formation and function

B. Lacunae

C. Central canal

D. Osteon

The main idea is that osteocytes stay alive and communicate by a network of tiny channels called canaliculi, which extend from the spaces that house osteocytes (lacunae). As bone forms, osteoblasts embed in the matrix and send out cellular processes that thread through small tunnels, creating the lacuno-canalicular network. This network's job is to enable nutrient delivery and waste removal by diffusion between osteocytes and nearby vessels, even when a cell is not right next to a blood supply. The central canal and osteon are separate features: the central canal contains blood vessels, and the osteon is the repeating unit of compact bone. So the term that best describes both the formation and function of canaliculi in this context is canaliculi formation and function.

7. What are fontanelles in the fetal skull?

A. Fontanelles are bone plates between skull bones in infants.

B. Fontanelles are cartilaginous joints in the skull.

C. Fontanelles are fibrous connective tissue gaps between skull bones in infants that allow growth of the brain.

D. Fontanelles are air-filled cavities in infants skull.

Fontanelles are soft gaps between the skull bones in infants filled with fibrous connective tissue. This arrangement keeps the skull bones separate enough to allow rapid brain growth during infancy and to enable the head to mold as it moves through the birth canal. They are not solid bone plates, nor cartilaginous joints, nor air-filled cavities. Over the first years of life, these gaps gradually ossify as the skull bones fuse. The largest, the anterior fontanelle, typically closes by about 18–24 months, while the posterior one closes much earlier.

8. Which term describes a small rounded projection on a bone?

A. Tubercle

B. Tuberosity

C. Epicondyle

D. Spine

The term for a small rounded projection on a bone is tubercle. A tubercle is a tiny bump that often serves as an attachment point for ligaments or muscles. In contrast, other projections are either larger and roughened (tuberosity), occur at different locations like above a joint surface (epicondyle), or are thin and sharp (spine). So the description of a small rounded bump matches tubercle, which you can see in examples like the humerus having greater and lesser tubercles.

9. In endochondral ossification, what invades the internal cavities to form spongy bone?

A. Periosteal bud

B. Osteoclasts

C. Nerve fibers

D. Blood clots

In endochondral ossification, bone forms by replacing a cartilage model. A periosteal bud—consisting of blood vessels plus osteogenic cells from the periosteum—invades the internal cavities of the cartilage model. This invasion brings osteoblasts that lay down bone matrix, beginning the formation of spongy bone and establishing the primary ossification center in the diaphysis. As this process continues, cartilage at the center is resorbed to create the medullary (marrow) cavity. While osteoclasts participate in remodeling later, and while blood vessels are part of the invading bud, the key driver for making the spongy bone in the internal cavities is the periosteal bud.

10. Which bones have complex shapes, such as vertebrae and coxal bones?

A. Irregular bones

B. Flat bones

C. Long bones

D. Short bones

Bones are categorized by shape, and irregular bones describe those with complex, nonuniform forms. These bones don't fit the simple long, short, or flat categories because their surfaces, ridges, and projections are specialized to handle multiple functions. Vertebrae, for example, have a body, a vertebral arch, and several processes that create joints and protect the spinal cord, along with attachment points for ligaments and muscles. The coxal bones of the pelvis are also irregular, made up of fused parts (ilium, ischium, and pubis) with a complex shape that bears weight, forms joints with the femur, and accommodates multiple muscle attachments. This intricate design lets irregular bones manage stresses in various directions and provide versatile articulation points. In contrast, flat bones are thin and curved to protect organs or provide broad muscle surfaces, long bones are tubelike for leverage, and short bones are cube-shaped for stability. So, the bones with vertebrae and the pelvis illustrate irregular bones with their characteristic complexity.

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://ivytechaphy101skeletalsys.examzify.com

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