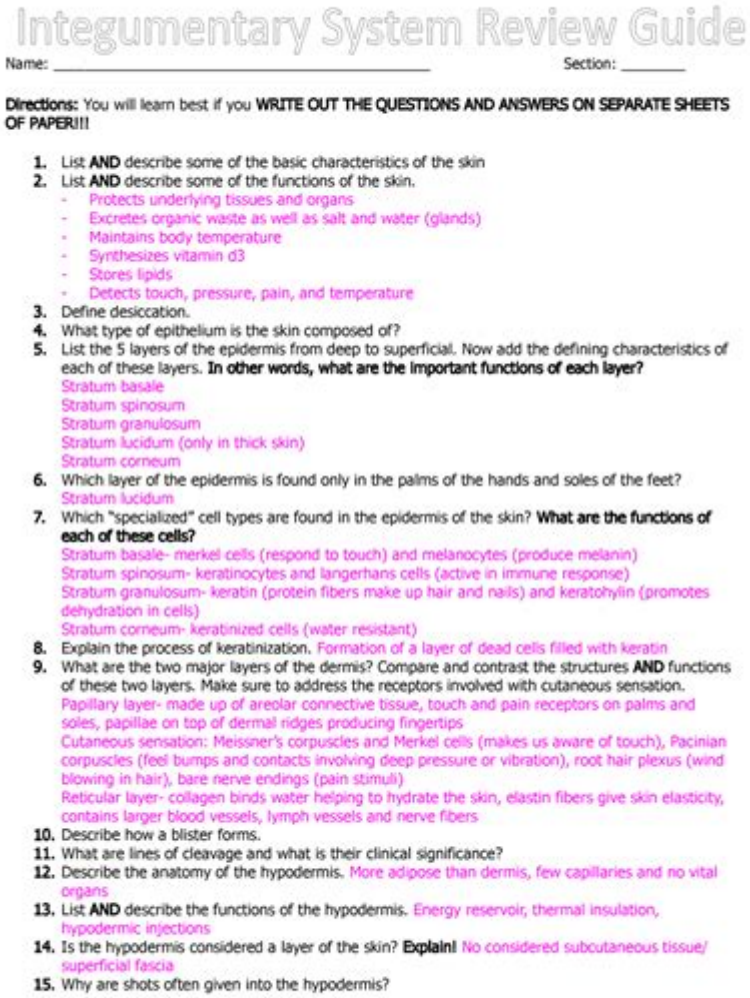
Integumentary System Review Guide Answer Key



Integumentary System Review Guide

Name: _____ Section: _____

Directions: You will learn best if you **WRITE OUT THE QUESTIONS AND ANSWERS ON SEPARATE SHEETS OF PAPER!!!**

1. List **AND** describe some of the basic characteristics of the skin
2. List **AND** describe some of the functions of the skin.
   - Protects underlying tissues and organs
   - Excretes organic waste as well as salt and water (glands)
   - Maintains body temperature
   - Synthesizes vitamin d3
   - Stores lipids
   - Detects touch, pressure, pain, and temperature
3. Define desiccation.
4. What type of epithelium is the skin composed of?
5. List the 5 layers of the epidermis from deep to superficial. Now add the defining characteristics of each of these layers. **In other words, what are the important functions of each layer?**
   Stratum basale
   Stratum spinosum
   Stratum granulosum
   Stratum lucidum (only in thick skin)
   Stratum corneum
6. Which layer of the epidermis is found only in the palms of the hands and soles of the feet?
   Stratum lucidum
7. Which "specialized" cell types are found in the epidermis of the skin? **What are the functions of each of these cells?**
   Stratum basale- merkel cells (respond to touch) and melanocytes (produce melanin)
   Stratum spinosum- keratinocytes and langerhans cells (active in immune response)
   Stratum granulosum- keratin (protein fibers make up hair and nails) and keratohylin (promotes dehydration in cells)
   Stratum corneum- keratinized cells (water resistant)
8. Explain the process of keratinization. Formation of a layer of dead cells filled with keratin
9. What are the two major layers of the dermis? Compare and contrast the structures **AND** functions of these two layers. Make sure to address the receptors involved with cutaneous sensation.
   Papillary layer- made up of areolar connective tissue, touch and pain receptors on palms and soles, papillae on top of dermal ridges producing fingertips
   Cutaneous sensation: Meissner's corpuscles and Merkel cells (makes us aware of touch), Pacinian corpuscles (feel bumps and contacts involving deep pressure or vibration), root hair plexus (wind blowing in hair), bare nerve endings (pain stimuli)
   Reticular layer- collagen binds water helping to hydrate the skin, elastin fibers give skin elasticity, contains larger blood vessels, lymph vessels and nerve fibers
10. Describe how a blister forms.
11. What are lines of cleavage and what is their clinical significance?
12. Describe the anatomy of the hypodermis. More adipose than dermis, few capillaries and no vital organs
13. List **AND** describe the functions of the hypodermis. Energy reservoir, thermal insulation, hypodermic injections
14. Is the hypodermis considered a layer of the skin? **Explain!** No considered subcutaneous tissue/ superficial fascia
15. Why are shots often given into the hypodermis?

Integumentary system review guide answer key is an essential tool for anyone studying human anatomy and physiology. The integumentary system, which includes the skin, hair, nails, and associated glands, plays a vital role in protecting the body, regulating temperature, and providing sensory information. In this comprehensive guide, we will cover the key components, functions, and common disorders related to the integumentary system, along with answers to common review questions.

Overview of the Integumentary System

The integumentary system is the largest organ system in the human body, encompassing a variety of

structures that serve multiple functions. It comprises:

- Skin (epidermis, dermis, and hypodermis)
- Hair
- Nails
- Glands (sebaceous and sweat glands)

Understanding the anatomy and physiology of the integumentary system is crucial for students and professionals in health-related fields. This system not only serves as a barrier against environmental hazards but also plays a significant role in homeostasis.

Functions of the Integumentary System

The integumentary system performs several critical functions, including:

1. **Protection:** The skin acts as a barrier, protecting underlying tissues from physical damage, pathogens, and harmful substances.
2. **Regulation of Temperature:** Through sweating and blood flow regulation, the integumentary system helps maintain body temperature.
3. **Sensory Reception:** The skin contains a variety of receptors that detect touch, pain, temperature, and pressure.
4. **Vitamin D Synthesis:** Exposure to sunlight enables the skin to synthesize vitamin D, essential for calcium absorption and bone health.
5. **Excretion:** Sweat glands excrete waste products, helping to regulate electrolyte balance.

Understanding these functions is crucial for identifying how the integumentary system contributes to overall health and well-being.

Anatomy of the Integumentary System

The integumentary system is composed of three primary layers, each with distinct structures and functions.

1. Epidermis

The epidermis is the outermost layer of the skin and serves as the primary barrier against environmental threats. It is made up of stratified squamous epithelium and is divided into several layers:

- **Stratum Corneum:** The outermost layer consisting of dead, flattened keratinized cells that provide a tough protective barrier.
- **Stratum Lucidum:** A thin, clear layer found only in thick skin areas (e.g., palms and soles).
- **Stratum Granulosum:** Contains keratinocytes that undergo a process of keratinization.
- **Stratum Spinosum:** Contains several layers of keratinocytes and provides strength and flexibility.
- **Stratum Basale:** The deepest layer where cell division occurs, producing new keratinocytes.

2. Dermis

The dermis lies beneath the epidermis and is much thicker. It is composed of connective tissue and contains various structures:

- **Blood Vessels:** Supply nutrients and oxygen to the skin and help regulate temperature.
- **Nerve Endings:** Provide sensory information like touch, pain, and temperature.
- **Hair Follicles:** Produce hair and are associated with sebaceous glands.
- **Glands:** Include sebaceous (oil) glands and sweat glands.

3. Hypodermis (Subcutaneous Layer)

The hypodermis is the deepest layer of the integumentary system, primarily composed of loose connective tissue and fat. It functions to:

- Insulate the body
- Provide cushioning and support

- Anchor the skin to underlying structures like muscles and bones

Common Disorders of the Integumentary System

Various disorders can affect the integumentary system, ranging from benign conditions to serious diseases. Some common disorders include:

- **Acne:** A condition characterized by clogged pores leading to pimples and cysts, often due to hormonal changes.
- **Eczema:** An inflammatory condition causing red, itchy, and scaly patches on the skin.
- **Psoriasis:** A chronic autoimmune condition that results in the rapid growth of skin cells, leading to thick, red, scaly patches.
- **Skin Cancer:** Abnormal growth of skin cells, with melanoma, basal cell carcinoma, and squamous cell carcinoma being the three most common types.
- **Fungal Infections:** Such as athlete's foot and ringworm, which thrive in warm, moist environments.

Preventive measures, early detection, and treatment are crucial for managing these conditions effectively.

Review Questions and Answer Key

To facilitate learning and retention, here are some common review questions about the integumentary system, along with their answers:

1. What are the main functions of the integumentary system?

Answer: The main functions include protection, temperature regulation, sensory reception, vitamin D synthesis, and excretion.

2. What are the three layers of the skin?

Answer: The three layers are the epidermis, dermis, and hypodermis.

3. What type of cells are found in the stratum basale?

Answer: The stratum basale contains keratinocytes, which are responsible for producing new skin cells.

4. Name one common skin disorder and its primary cause.

Answer: Acne is a common skin disorder primarily caused by clogged pores, often related to hormonal changes.

5. How does the integumentary system contribute to temperature regulation?

Answer: The integumentary system regulates temperature through the dilation and constriction of blood vessels and the production of sweat.

Conclusion

The integumentary system is a complex and vital part of human anatomy. Understanding its structure, functions, and common disorders is essential for anyone studying health sciences. The integumentary system review guide answer key serves as an invaluable resource for students, helping consolidate knowledge and prepare for examinations. By familiarizing oneself with this system, learners can appreciate the significant role it plays in maintaining overall health and protecting the body from external threats.

Frequently Asked Questions

What are the primary functions of the integumentary system?

The primary functions include protection, regulation of body temperature, sensation, excretion, and synthesis of vitamin D.

What are the main components of the integumentary system?

The main components are the skin, hair, nails, and associated glands such as sweat and sebaceous glands.

How does the integumentary system contribute to homeostasis?

It helps maintain homeostasis by regulating body temperature through sweating and blood flow, and by providing a barrier to pathogens.

What layers make up the skin?

The skin is comprised of three main layers: the epidermis, dermis, and hypodermis (subcutaneous layer).

What role do melanocytes play in the integumentary system?

Melanocytes produce melanin, which gives skin its color and provides protection against UV radiation.

What are common disorders of the integumentary system?

Common disorders include acne, eczema, psoriasis, skin infections, and skin cancer.

How can the integumentary system be assessed during a physical examination?

Assessment can include inspection for color, texture, and moisture; palpation for temperature and turgor; and checking for lesions or abnormalities.

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