Chapter 5: Integumentary System

I. Overview of the Integumentary System

A. List the five major functions of the integumentary system:

1. _____
2. _____
3. _____
4. _____
5. _____

II. Skin

A. Epidermis

1. The epidermis consists of _____
2. Most cells of the epidermis are _____
3. Where are new cells formed? _____
4. What is it called when surface cells slough off? _____
5. What does the process of keratinization refer to: _____
6. Stratum Basale - deepest layer of epidermis
   a. This is composed of _____
   b. What anchors this layer to the basement membrane? _____
   c. This layer produces new cells by the process of _____
      1. One daughter cell _____
      2. The other daughter cell _____
   d. How long does it take a cell to desquamate? _____
7. Stratum Spinosum
   a. This layer is composed of _____
   b. The spine like appearance in the microscope is due to _____
   c. What does the term “Stratum Germinativum” refer to: _____
8. Stratum Granulosum
   a. This layer is composed of _____
   b. Contains protein granules of _____

c. The nucleus and organelles _____ & the cell _____

9. Stratum Lucidum
   a. This layer appears as _____
   b. This layer consists of _____
10. Stratum Corneum - the most superficial layer
   a. This layer consists of _____
   b. What is a “cornified cell”? _____
   c. What is keratin? _____
   d. The structural strength of the stratum corneum is due to _____ and _____

B. Thick and Thin Skin
1. Thick skin has how many epithelial strata? _____
2. Where would you find thick skin? _____

3. What is responsible for the ridges of thick skin?_____
4. Functionally the ridges _____ &_____
5. What layer is absent from thin skin? _____
6. Which type of skin is more flexible? _____
7. Which type of skin will have hair? _____
8. What causes a callus to develop? _____
9. Where would you find a corn? _____

C. Skin Color
1. Melanin
   a. What amino acid is used to produce melanin? _____
   b. Melanin is produced by _____
   c. What is a melanosome?_____
   d. Describe how melanin gets inside keratinocytes: _____
   e. Melanin production is determined by:
      1. _____

2. _____
3. _____

f. Genetics determines the:

1. _____ and _____ of melanin produced by melanocytes
2. _____, _____ & _____ of melanosomes

g. Hormones usually increase melanin production during _____

h. Exposure to ultraviolet light _____ & _____

2. Carotene

a. Is a _____ pigment commonly found in _____

b. Excess carotene accumulates in the _____ & _____

1. This gives the skin a _____

3. Hemoglobin

a. Blood flowing through the skin gives it a _____

b. What does cyanosis mean? _____

D. Dermis

1. The dermis is responsible for most of _____
2. What is the main connective tissue fiber present? _____
3. Reticular Layer - main layer of dermis

a. Is this layer deep or superficial? _____

b. This layer is composed of _____

c. What is responsible for cleavage or tension lines?

_____

d. When the dermis ruptures it may produce _____

4. Papillary Layer

a. The layer is named for _____

b. The layer is composed of _____

III. Hypodermis

A. It consists of _____ with _____ & _____

B. When not part of the skin it is also called _____ or _____

IV. Accessory Skin Structures

A. Hair

1. Define the following three hair terms:
   a. Lanugo _____
   b. Vellus hairs _____
   c. Terminal hairs _____
2. Hair structure
   a. What part of the hair is found above the skin surface? _____
   b. What is the name for the hair part below the skin surface? _____
   c. What is the hair bulb? _____
   d. What is the dermal root sheath? _____
   e. What is the epithelial root sheath?_____
   f. Where is the matrix found? _____
      1. What is produced by the matrix? _____
3. Hair Growth
   a. During the growth stage _____
   b. What happens to the hair at the end of the resting stage? _____
4. Hair Color
   a. Color is due to the amount of _____
   b. What causes hair color to fade or become white? _____

B. Muscles

1. What are the arrector pili? _____
2. How does hair position change when the arrector pili contract? _____
   a. The raised areas produced by this movement are called
3. What two events can cause the arrector pili to contract?
   a. _____
   b. _____
4. What two benefits do most animals receive from this response?
   a. _____
   b. _____

C. Glands

1. Sebaceous Glands
    a. The glands are located in the _____
    b. Structurally they are simple _____
    c. These glands produce _____
        1. This substance is _____ rich in _____
    d. How do sebaceous glands release sebum? _____
        1. Therefore functionally sebaceous glands are classified as _____
    e. Most sebaceous glands are connected to _____
    f. What are the two functions of sebum?
        1. _____
        2. _____
2. Sweat Glands or Sudoriferous Glands
    a. Which type of sweat gland is most common? _____
    b. Describe the composition of merocrine (eccrine) sweat gland secretions: _____
    c. What does sweat do for a person? _____
    d. Where are apocrine sweat glands found in humans? _____
    e. Apocrine sweat glands become active at _____
    f. Body odor from sweat is the result of _____
3. Ceruminous Glands
    a. Ceruminous glands are located in _____
    b. Cerumen is the combined secretions of _____ & _____
    c. Functionally cerumen _____

D. Nails

1. List three functions of nails:
    a. _____
    b. _____
    c. _____

2. Define the following terms related to nails:
   a. Nail root _____
   b. Nail body _____
   c. Nail fold _____
   d. Nail groove _____
   e. Eponychium _____
   f. Hyponychium _____
   g. Nail bed _____
   h. Nail matrix _____
   i. Lunula _____
3. The nail is composed of _____

V. Summary of Integumentary System Functions

A. Describe six ways in which the integumentary system is involved in protection:

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
5. _____
   _____
6. _____
   _____

B. Sensations

1. What sensations do we experience because of receptors in the integumentary system? _____

2. The epidermis and dermal papillae are well supplied with _____
3. The dermis and deeper tissues contain receptors for:
    a. _____
    b. _____
    c. _____
    d. _____
    e. _____

C. Temperature Regulation
1. For the body to loose excess heat:
    a. Blood vessels in the dermis _____
    b. Sweat spreads over the skin _____
2. For the body to conserve heat dermal blood vessels _____
3. Does contraction of arrector pili in humans prevent heat loss? _____

D. Vitamin D Production
1. Functionally Vitamin D is important in raising blood levels of:
    a. _____
    b. _____
2. Vitamin D production requires the skin to be exposed to _____

E. Excretion
1. List three waste products contained in sweat:
    a. _____
    b. _____
    c. _____
2. The quantity of waste products in sweat is _____

VI. Effects of Aging on the Integumentary System

A. List two reasons the skin is more easily damaged as a person gets older:
1. _____
2. _____

B. What causes the skin to sag and wrinkle? _____&
_____

C. Why does the skin become drier? _____

D. Elderly often suffer from heat prostration because _____

E. Generally the number of functioning melanocytes _____

F. What causes age spots? _____