Ch 5 Integumentary System Notes

Skin- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Functions of skin:

1.

2.

3.

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for touch (surface)

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for pressure (deep)

c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for low frequency & cold

d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for pain

In 1 sq. inch of skin you will find:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Components of the integumentary system:

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I. Skin- consists of 2 distinct regions:**

A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- superficial, thin; avascular; epithelial tissue

B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- deep, bulk of skin; vascular; fibrous connective tissue

\*The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or superficial fascia, is not part of the skin but has some skin characteristics; Made mostly of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tissue; anchors skin to underlying structures.

**A. Epidermis- surface of skin**; thin; made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tissue; 2 layers thick; avascular; thickness determines if skin is “thick” or “thin” {thick found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; thin found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_}

1) **5 Cell Layers of epidermis**

a. Stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Outer layer; contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Clear layer; found only in thick skin

c. Stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Contains \_\_\_\_\_\_\_\_\_\_\_; water barrier

d. Stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- “Spiny” cells

e. Stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- Inner layer; used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and produce new cells (“germinates”) as well as the pigment \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2) **4 Cell Types**

a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- produce keratin; sometimes called “prickle cells”

b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- spider-shaped; produce melanin

c.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- star-shaped macrophages; activate immune system.

d.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- sense touch

**~~Dermal- Epidermal Junction~~** “glue” between stratum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and dermis; Where blisters occur

**B. Dermis- main part of skin**; thick; made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tissue with semifluid matrix embedded with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_fibers vascularized; contains nerves, blood vessels, and lymphatic vessels as well as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hair follicles, \_\_\_\_\_\_\_\_\_\_ glands, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ glands.

2 layers:

1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- responsible for fingerprints in thick skin; projections contain tactile (Meissner’s) corpuscles.

2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- makes up 80% of dermis; contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (tension) lines where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fibers run parallel to surface; also have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines near joints to allow flexibility where dermis secured to deeper structures.

**Sensors:**

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- detect light touch; found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (lamellar corpuscles)- detect pressure; found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- detect low frequency and cold; found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**II. Skin Color**

Skin has 3 pigments that contribute to it’s color:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—only pigment made in the skin by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ; color is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-- most obvious in palms & soles; color is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be converted to Vit A for vision

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ --color is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; can ben seen in Caucasians due to lower levels of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Humans have same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ so skin color differences are due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of melanin.

**III. Appendages of Skin—Hair & Nails**

**A. Hair-** made ofdead \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells; produced by hair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

contains hard keratin.

**1} Functions:**

1.

2.

3.

4.

**2} Regions/Structures**

a. hair follicle-

b. hair papillae-

c. root-

d. shaft-

e. dermal blood vessel-

f. arrector pili muscle-

**3} The hair shaft consist of 3 parts that look like concentric circles in cross section:**

**a. medulla-**

**b. cortex-**

**c. cuticle-**

|  |
| --- |
| Sketch & label a cross-section of the hair shaft: |

Hair color is determined by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why does hair turn grey? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**B. Nails-** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells filled with keratin; function is as a protective cover for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; contains 3 sections (free edge, nail plate, and root)

**C. Glands-** Sweat (sudoriferous) glands & oil (sebaceous) glands; most numerous are the sweat (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) glands

1} Sweat glands classified as:

a. eccrine- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; most abundant type; ducts

connect to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; job is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; secretion is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. apocrine-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; secrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; larger; contains ducts that empty into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ; modified apocrine glands include ceruminous glands that secrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and mammary glands that secrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2} Oil glands- widely distributed; most secrete into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; secrete substance called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**IV. Functions of Integumentary System**

Functions include:

1. Protection-

a. *chemical-* by secreting chemicals such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; also by keeping a low pH (\_\_\_\_\_\_\_\_\_ mantle); protects against UV via \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. *physical-* the flat, dead, keratinized cells of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_block water & water-sol substances

c. *biological-* the epidermis contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells; the dermis contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; DNA can absorb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & transform it into heat

2. Temperature Regulation- sweat glands produce about \_\_\_\_\_\_\_\_\_\_\_ ml/day of sweat

3. Cutaneous Sensory Receptors- temperature & touch detected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ such as Pacinian corpuscles; free nerve endings detect \_\_\_\_\_\_\_\_\_\_

4. Metabolic Functions- skin can synthesize Vitamin \_\_\_\_\_\_\_\_\_ ; some carcinogens can be deactivated by chemicals from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Blood Reservoir- Skin can hold up to \_\_\_\_\_\_\_% of body’s total blood volume

6. Excretion- Skin can secrete limited amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ammonia, urea, & uric acid); salt & water is lost through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**V. Skin Cancer-**

Most are noncancerous (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) & don’t spread (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

Risk factors include:

a. overexposure to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. frequent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3 major types of skin cancer:

a. basal cell carcinoma- most common; least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; surgical cure by excision in \_\_\_\_\_\_\_\_% of cases

b. squamous cell carcinoma- 2nd most common type; can \_\_\_\_\_\_\_\_\_\_\_; usually seen as scaly, red papule on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; good prognosis

c. melanoma-cancer of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; most dangerous type because it can metastasize; survival good if detected early

What is the ABCD rule?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**VI. Burns**

* Can be caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The damaging effects of burns is caused by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of proteins (destroys cells)
* Threat to patient is dehydration & electrolyte imbalance which can lead to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evaluation of burns is done with the Rule of Nines (estimates volume of fluid loss). Explain how the rule of nines works:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Burns are classified by severity:

1st-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2nd-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3rd\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Critical burns if:

>25% of body covered with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ burns

>10% of body covered with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ burns

Common treatments of burns:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_