

Things to know for this test:

- ✓ **Body membranes: functions, locations, specific examples, and how they are named**
- ✓ **Basic Skin Functions**
- ✓ **Basic Skin/Integumentary Structure (5 layers of Epidermis, 2 layers of dermis, & hypodermis)**
- ✓ **Skin Appendages (2 types of glands, hair, and nails)**
- ✓ **Rule of Nines and different types of burns**
- ✓ **Three types of skin cancer and ABCDE rule**

1. What are the major functions of body membranes?
 - a. **Line or cover body surfaces**
 - b. **Protect body surfaces**
 - c. **Lubricate body surfaces**

2. What type of body membrane lines body organs and tissues open to the exterior environment?

Mucous Membranes
3. What type of body membrane lines body organs and tissues NOT open to the exterior environment?

Serous Membranes
4. What type of body membrane makes up most of the skin? **Cutaneous Membrane**
5. What type of body membrane lines joint cavities to prevent friction and arthritis? **Synovial Membranes**
6. Serous membranes come in pairs (visceral & parietal layers), and are named for their location in the body and proximity to specific organs. Describe where the following are found: (be specific!)
 - a. Parietal pleura—**outer serous membrane surrounding the lungs**
 - b. Visceral pleura—**inner serous membrane surrounding the lungs**
 - c. Parietal pericardium—**outer serous membrane surrounding the heart**
 - d. Visceral pericardium—**inner serous membrane surrounding the heart**
 - e. Parietal peritoneum—**outer serous membrane surrounding the abdominal cavity and its organs**
 - f. Visceral peritoneum—**inner serous membrane surrounding the abdominal cavity and its organs**
7. What are the functions of the epidermis & dermis? Also, name the main type of tissue in each of the two layers.

Epidermis – outermost layers of skin that provides hard, barrier (keratinized) composed of stratified squamous epithelium

Dermis – underlying skin layers made up of dense connective tissue that house nerve receptors, glands, and blood vessels to maintain nutrient flow and keep skin functioning normally
8. What specific type of epithelial tissue forms the epidermis? **Stratified Squamous Epithelium (avascular)**
9. Are epidermal cells alive or dead at the surface (in the stratum corneum layer)? Dead
10. What is keratin? **Fibrous protein that makes epidermis a tough, protective, and waterproof layer**
11. What are the functions of keratin?

Makes cells tough, durable, and waterproof; resistant to mechanical and chemical damage, and prevents desiccation (drying out)
12. What are melanocytes? What is their function in the skin and hair?

Cells that create the pigment melanin, found in stratum basale; Gives the skin and hair its color

13. What is the function of melanin in the skin?

Melanin is a pigment that is produced by the melanocytes. Its primary function is to shield our cells and DNA from the harmful UV radiation from the sun. It absorbs the rays and prevents them from causing damage. It is the primary reason why we tan. The more melanin present, the darker the skin color and the more absorbing power present.

14. What are the two layers of the dermis, and what are the major skin structures that are housed in each layer?

a. **Papillary layer**

A. **Projections called dermal papillae (form fingerprints)**

B. **Pain & touch receptors**

C. **Capillary loops**

b. **Reticular layer**

A. **Blood vessels (supply oxygen/nutrients & regulate body temp)**

B. **Sweat & oil glands**

C. **Nerve receptors (deep pressure)**

****Collagen & Elastic fibers found throughout dermis****

15. How does the blood flow within the dermis help with heat regulation (body temperature homeostasis)?

Please use the terms: vasoconstriction and vasodilation

The dermis is loaded with blood vessels that play a huge role in thermoregulation (maintaining body temperature homeostasis). When an individual gets hot or temperature rises, the blood vessels swell or dilate (called vasodilation) with heated blood. This moves the heated blood closer to the skin's surface (giving us a reddish hue) where heat can be lost through radiation.

When an individual gets cold or is exposed to cooler temperatures, the blood vessels constrict or shrink in size (called vasoconstriction). The blood also bypasses these blood vessels thus keeping the warm blood closer to the interior. The result is often whitish skin or in some extreme cases, blue or purple coloration.

16. What specific type of connective tissue forms the dermis? _____ **Dense Connective** _____

17. What is the hair follicle?

Flexible epithelial structure that houses the hair root and produces hair growth.

18. What are the arrector pili muscles (in the dermis) and what do they do?

Smooth muscle bands that connect hair follicle to dermal tissue and contract to force hair out and cause goosebumps.

19. What are sebaceous (oil) glands? What is the main product of this gland? What does this product do for our skin?

Oil glands, sebum, to lubricate skin, to keep skin soft and pliable and to keep hair soft and prevent brittleness

20. What are the functions of sudoriferous (sweat) glands?

Thermoregulation (heat control) and excretion of wastes

21. What are the two types of sudoriferous glands? How are they different?

a. **Eccrine – produce most of sweat, found everywhere, important in thermoregulation, opens into pores of the skin via ducts**

- b. Apocrine – produce some sweat, found in axillary and genital regions, activate during puberty, opens through the hair follicle; yellowish – milky white secretion that bacteria feed off of and create body odor.

22. What are the 3 layers of the integument? Briefly describe each one.

Epidermis—most superficial, 20-30 cell layers thick (stratum corneum), consists of stratified squamous tissue, waterproof, 5 layers total

Dermis—consists of dense connective tissue, contain nerve receptors, blood vessels, oil and sweat glands, hair and hair follicles, 2 layers

Subcutaneous/hypodermis layer—Made mainly of adipose tissue; insulates from extreme temperature change; acts as a shock absorber to protect organs.

23. List and describe the functions of the skin. (There are 9 of these!)

- a. Protects against mechanical damage (bumps, friction, abrasion)—by providing a physical barrier
- b. Protects against chemical damage (acids, bases)—creates impermeable layer, contains pain receptors
- c. Protects against bacterial damage (pathogens)—barrier prevents penetration into deeper tissues, creates acid mantle which inhibits bacterial growth, and phagocytes ingest foreign substances and pathogens
- d. Protects against ultraviolet (UV) radiation—melanin produced by melanocytes absorbs harmful UV rays
- e. Protection against thermal damage (heat and cold)—contains heat, cold, and pain receptors
- f. Protection against desiccation (drying out)—contains waterproofing substances such as keratin
- g. Thermoregulation— aids in body heat loss (sweat glands, increased blood flow through capillaries) or heat retention (decreased blood flow through capillaries)
- h. Synthesis of Vitamin D from cholesterol—using energy from the sun
- i. Excretion of metabolic wastes—such as urea and uric acid through perspiration (sweating)

24. The dermal papillae create the epidermal ridges, which cause the genetically unique fingerprints on the tips of the fingers.

25. What are the 3 pigments that make up skin color? Describe them.

Melanin – black, brown, and yellow that gives skin its color, protects against UV rays

Hemoglobin – molecule that holds O₂ and gives Caucasians rosy color

Carotene – orange-yellow pigment founds in carrots, gives skin orange-ish appearance

26. List and describe the different types of abnormal skin coloration and what they might indicate?

- Cyanosis: Skin appears blue due to poorly oxygenated hemoglobin protein, Common during heart failure and breathing disorders
- Redness or Erythema: Skin appears red, flushed; Common during embarrassment (blushing), fever, hypertension (high blood pressure), inflammation, and allergy
- Pallor or Blanching: Skin appears pale and lighter than usual, Common during strong emotions (fear, anger), anemia, low blood pressure, or impaired blood flow
- Jaundice: Skin appears abnormally yellow, Commonly indicates a liver disorder (bile pigments are absorbed into blood and deposited into body tissues)

- **Bruises: Skin appears black and blue; Areas where blood has escaped from circulation and has clotted in the tissue spaces (called a hematoma); Common in hemophiliacs (have bleeder's disease) or if deficient in Vitamin C**

27. Describe the process of how hair and nails grow from the hair bulb matrix and the nail matrix, respectively.

As hair and nail cells are produced by the hair bulb matrix and nail matrix, respectively, they become heavily keratinized and die. Therefore, hair and nails consist mostly of protein that is non-living material.

28. Describe the three types of burns. Which is most common? Which is the worst/most damaging?

1st degree– superficial, heal in two to three days (most sunburns), only epidermis affected, most common

2nd degree - epidermis and upper dermis affected, painful and blistering, skin can regenerate later

3rd degree– no regeneration of skin, worst kind, entire thickness of skin affected, infection is common later

29. What is the rule of nines? Why is it important? (What does it allow doctors to do?)

This is a method of determining body percentage of burns. Divides body into 11 regions that represent 9% of body skin, 1% is in genital region. It allows doctors to estimate how much body fluid has been lost.

30. How much of the body skin percentage is represented by the whole right arm? 9%

31. How much of the body skin percentage is represented by the front and back of head combined? 9%

32. How much of the body skin percentage is represented by the front of your left leg? 9%

Match the following words with their description.

- | | |
|-----------------------|----------------------------------|
| a. Stratum basale | e. Stratum lucidum |
| b. Stratum spinosum | f. Papillary Layer |
| c. Stratum granulosum | h. Reticular Layer |
| d. Stratum corneum | g. Hypodermis/Subcutaneous Layer |

33. Outermost layer of skin D

34. Where melanocytes are found A

35. Layer of epidermis usually only found on palms of hands and soles of feet E

36. Not a layer of skin, mostly made of adipose tissue G

37. Layer of dermis where touch and pain receptors are found as well as capillaries to provide nutrients to stratum basale. F

38. Site of most cellular division A

39. Layer of dermis where deep pressure receptors are found H

40. The thickest layer of skin, usually 20-30 layers of cells thick D

41. Where we get our finger prints from F

42. Layer of dermis where blood vessels, oil and sweat glands are found H

43. Describe the three types of skin cancer, include the cell types involved.

- **Basal Cell Carcinoma: Least malignant, Most common type, Arises from stratum basale**
- **Squamous Cell Carcinoma: Arises from stratum spinosum; Metastasizes to lymph nodes; Early removal allows a good chance of cure**
- **Malignant melanoma: Most deadly of skin cancers; Cancer of melanocytes; Metastasizes (travels and settles in) rapidly to lymph and blood vessels; Detection uses ABCDE rule**

44. What is the most common type of skin cancer? Basal Cell Carcinoma

45. What is the most dangerous type of skin cancer? Malignant Melanoma

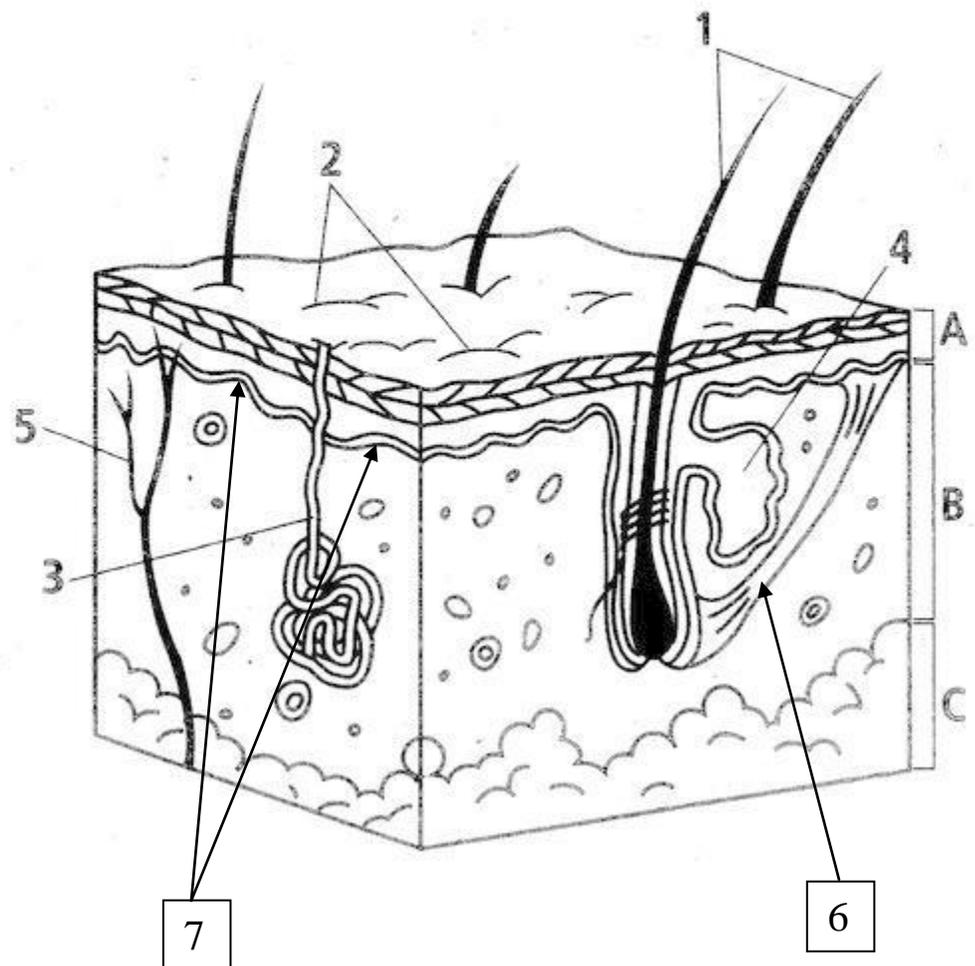
46. What is the ABCDE rule? What type of skin cancer does it apply to?

Method of examining skin for new moles or pigmented spots to see if possibly cancerous, Malignant Melanoma

- ✓ **Asymmetry** – 2 or more sides are uneven
- ✓ **Border Irregularity** – no smooth areas, indented edges
- ✓ **Color** – black, brown, tan, and sometimes blue/red
- ✓ **Diameter** – greater than 6mm in diameter.
- ✓ **Evolving** – changing size, shape, or color

Structure of Human Skin

1. Hair Shaft
2. Epidermal Ridges
(fingerprints)
3. Eccrine Sweat Gland
4. Sebaceous Oil Gland
5. Blood Vessel
(capillary)
6. Arrector Pili Muscle
7. Dermal Papillae



Layers of the Integument

- A. Epidermis
- B. Dermis
- C. Hypodermis

Matching section on the back!!

Match the terms in Column A with the correct description in Column B.

Column A

- D** 1. Epidermis
- N** 2. Melanin
- G** 3. Subcutaneous Layer/Hypodermis
- Q** 4. Hair Shaft
- A** 5. Keratin
- F** 6. Dermis
- Y** 7. Sudoriferous Gland
- W** 8. Hair Follicle
- P** 9. Arrector Pili
- O** 10. Stratum basale
- I** 11. Dermatitis (use your med terms sheet)
- E** 12. Melanocytes
- C** 13. Albinism (albino person)
- T** 14. Dermal Papillae
- M** 15. Jaundice
- H** 16. Hair Root
- B** 17. Sebaceous Glands
- X** 18. Sebum
- K** 19. Stratum corneum
- V** 20. Carotene
- J** 21. Hemoglobin
- S** 22. Skin
- L** 23. Eccrine Gland
- U** 24. Apocrine Gland
- R** 25. Nail

Column B

- A. Nonliving, hard protein substance
- B. they produce a thick, oily substance called sebum
- C. skin condition caused by an absence of melanin
- D. outermost covering; one of the two major layers of the skin
- E. cells that produce skin pigment
- F. considered the true layer, or “hide” of the skin
- G. adipose layer beneath dermis
- H. the part of the hair implanted in the skin
- I. inflammation of the skin
- J. molecule found in blood that gives the skin a red color when flushed
- K. layer of the epidermis that is composed mostly of shingle-like, keratinized cells that are dead
- L. sweat gland found all over the body, involved in body temperature regulation
- M. yellow discoloration of the skin, indicative of liver disorder
- N. pigment that can have a black, brown or yellow tint
- O. layer of the epidermis where new cells (mitosis) are being made
- P. tiny smooth muscle that causes “goose bumps”
- Q. part of the hair that protrudes from skin surface
- R. scale-like modification of the epidermis that is mostly keratinized
- S. is a cutaneous membrane
- T. permanent ridges of the skin that give us our fingerprints
- U. sweat gland that becomes active during puberty, along with bacteria produces body odor
- V. gives the skin an orange color; molecule found in some vegetables
- W. tube that holds the hair root
- X. lubricates the skin, keeping it soft and pliable
- Y. another name for a sweat gland