**Wound Care Certification Review #9**
**Structures and Function of Normal and Abnormal Skin**

1. Which layer of the skin provides the greatest tensile strength and contains collagen and elastin fibers?
A. Epidermis
B. Dermis
C. Subcutaneous tissue
D. Stratum corneum

2. The stratum basale is primarily responsible for which function?
A. Waterproofing the skin
B. Producing keratinocytes for epidermal renewal
C. Providing a barrier against microorganisms
D. Housing sweat glands and sebaceous glands

3. Which type of cell in the epidermis plays a sensory role and is associated with light touch?
A. Melanocyte
B. Merkel cell
C. Langerhans cell
D. Fibroblast

4. Keratinocytes move upward from the basal layer and are fully replaced approximately every:
A. 3 days
B. 7 days
C. 14 days
D. 28 days

5. Which structure anchors the epidermis to the dermis and is critical for preventing skin separation and blister formation?
A. Collagen bundles
B. Subcutaneous fascia
C. Basement membrane zone
D. Stratum lucidum

6. The papillary dermis primarily consists of:
A. Dense irregular connective tissue
B. Loose connective tissue with capillaries and sensory endings
C. Adipose tissue and sweat glands
D. Flattened keratinocytes

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7. Which of the following cells is responsible for collagen synthesis during wound healing?
A. Langerhans cell
B. Fibroblast
C. Mast cell
D. Endothelial cell

8. A patient has a full-thickness wound extending into the subcutaneous fat layer. Which skin layers are damaged?
A. Epidermis only
B. Epidermis and papillary dermis
C. Epidermis and entire dermis
D. Epidermis, dermis, and underlying fascia

9. Melanocytes are primarily found in which layer of the skin?
A. Stratum basale
B. Stratum corneum
C. Papillary dermis
D. Reticular dermis

10. Which function is most directly associated with the dermal vascular network?
A. Regeneration of keratinocytes
B. Thermal regulation and nutrient delivery
C. Melanin production
D. Keratin formation

11. In aged or chronically sun-damaged skin, the dermis often shows:
A. Increased collagen and elastin production
B. Flattening of the dermal-epidermal junction
C. Thickening of the stratum corneum
D. Expansion of sebaceous glands

12. The subcutaneous layer serves which of the following key purposes?
A. Preventing transepidermal water loss
B. Providing cushioning, insulation, and energy storage
C. Forming the skin barrier to bacteria
D. Producing melanin

13. Which abnormal process occurs when fibroblast activity and collagen deposition are excessive during wound healing?
A. Keloid formation
B. Eschar development
C. Skin atrophy
D. Epidermal hyperplasia

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14. The Langerhans cells in the epidermis function primarily to:
A. Produce collagen
B. Regulate skin hydration
C. Provide immune surveillance and antigen presentation
D. Maintain skin elasticity

15. Which statement best describes epithelialization in wound healing?
A. New collagen replaces granulation tissue
B. Fibroblasts form the extracellular matrix
C. Keratinocytes migrate across the wound bed to restore the epidermis
D. Capillaries retract to close the wound

Answer Key & Explanations
1. B – Dermis: The dermis provides tensile strength and elasticity through collagen (Type I and III) and elastin fibers.
2. B – Producing keratinocytes: The stratum basale (basal layer) continuously divides to produce new keratinocytes for epidermal renewal.
3. B – Merkel cell: Merkel cells function as mechanoreceptors responsible for light touch sensations in the epidermis.
4. D – 28 days: The epidermal turnover cycle averages 28 days in healthy adults, varying with age and health.
5. C – Basement membrane zone: This zone links the epidermis and dermis, providing structural integrity and resistance to friction or shear.
6. B – Loose connective tissue: The papillary dermis contains fine collagen fibers, capillaries, and sensory nerves that nourish and support the epidermis.
7. B – Fibroblast: Fibroblasts synthesize collagen, elastin, and ground substance essential for wound repair and tensile strength.
8. D – Epidermis, dermis, and underlying fascia: A full-thickness wound extends through both epidermis and dermis, often into subcutaneous fat or fascia.
9. A – Stratum basale: Melanocytes reside in the basal layer, producing melanin to protect against ultraviolet radiation.
10. B – Thermal regulation and nutrient delivery: Dermal blood vessels regulate temperature, oxygen delivery, and waste removal for skin metabolism.
11. B – Flattening of the dermal-epidermal junction: Aging and UV exposure cause dermal thinning and flattening, increasing skin fragility and tear risk.
12. B – Cushioning and insulation: The subcutaneous (hypodermal) layer insulates, cushions, and stores energy in adipose tissue.
13. A – Keloid formation: Excess collagen deposition beyond wound margins leads to hypertrophic or keloid scars.
14. C – Immune surveillance: Langerhans cells act as antigen-presenting cells, initiating immune responses to pathogens.
15. C – Keratinocyte migration: During epithelialization, keratinocytes migrate from wound edges to resurface and restore the epidermal barrier.

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