ANATOMY & PHYSIOLOGY ANSWER SHEET

Team Name: _____

INTEGUMENTARY SYSTEM

1. ____D_____

2. ____A_____

3. ____C_____

4. ____B_____

5. ____C_____

6. ____D_____

7. ____thick_____

8. ____thin_____

9. ____thick_____

10. ___thin_____

11. ___thick_____

12. ___thick_____

13. ___thick_____

14. ___thin_____

15. ___thin_____

16. ___a, d, e_____

17. ___c, j_____

18. ___f, g, h, j_____

19. ___b, i, j_____

20. ___A_____

21. ___B_____

22. ___D_____

23. ___B_____

24. ___A_____

25. ___B_____

26. ___D_____

27. ___E_____

28. ___C_____

29. ___A_____

30. ___E_____

31. ___B_____

32. ___B_____

33. ___C_____

34. ___E_____

35. ___A_____

36. ___B_____

37. ___A_____

38. ___D_____

39. A: ____epidermis_____

    B: ____dermis____

    C: ____hypodermis___

    D: ____hair bulb____

    E: ____hair follicle_____

    F: ____venule___

    G: ____arteriole____

    H: _sudoriferous gland___

    I: _arrector pili__

    J: ___sweat pore_____

    K: ___sebaceous gland_

    L: ___hair shaft_____

40. A: ___stratum corneum__

    B: __stratum lucidum_

    C: __stratum granulosum__

D: __stratum spinosum__

E: __stratum basale_

F: __papillary dermis__

G: __reticular dermis__

H: __hypodermis___

I: __stratum corneum____

J: ___stratum lucidum__

K: __stratum granulosum_

L: _stratum spinosum__

M: __stratum basale__

N: __melanocyte___

O: __ lamellar granules__

P: ___keratinocyte___

Q: __Merkel cell___

41. A: ___lunule____

B: ___lateral nail fold_____

C: ___free edge of nail___

D: ___body of nail___

E: ____eponychium___

F: ____proximal nail fold__

G: ___root of nail__

H: ____nail matrix_____

I: ____nail bed_____

J: ____phalanx***_____

42. 6 points

Waterproof – keratin and glycolipids (3 pts)
Continuity – prevents bacterial invasion (3 pts)

43. 6 points

Produces sweat to dissipate heat -- when body temperature rises, blood vessels in dermal area dilate and sweat glands are stimulated into activity, evaporation of sweat dissipates heat (3 pts)

Dermal blood vessels constrict and pull blood away from skin and keeps it lcose to body core to retain heat (3 pts)

44. 6 pts

Newly formed cells in stratum basale (2 pts)
Keratinization (1 pt)
Apoptosis (1 pt)
Slough off and are replaced (1 pt)
1 pt for all correct

45. pick 4: 2 pts each

Melanin/other skin pigments
Environment (UV factors)
Genetics
ACTH (pituitary hormones)
Hemoglobin content
Volume of blood in skin capillaries

46. 6 pts

Prolonged exposure increases melanin in the skin. Melanin is a dark pigment → darkens skin. (3 pts)

This serves a biological purpose because melanin protects the skin from harmful UV radiation. (3 pts)

47. 12 pts total, 3 pts for each type of skin marking

Friction ridges: markings on fingertips (i.e. fingerprints), help manipulate objects

Flexion lines: flexor surfaces (digits, palms, wrists, elbows) where skin is tightly bound to deep fascia

Freckles: flat melanized patches
Moles: elevated patch of melanized skin

48. 10 pts total, 2 pts for each change

Dendritic cells decrease (reduced immune response)
Vitamin D3 production declines (calcium absorption declines)
Glandular activity declines (skin dries, body can overheat)
Blood supply to dermis declines (tend to feel cold)
Dermis thins and becomes less elastic (wrinkles)
Hair follicles die or produce thinner hair
Underlying fat padding begins to disappear (sagging)

49. 16 pts total, 4 per sensation (2 for sensation, 1 for receptors, 1 for location)

Light touch, meissner's corpuscles, capsules of connective tissue
Heavy pressure, paccinian corpuscles, deep skin (dermis)
Pain, pain receptors, nerve endings in skin
Tepmerature, thermoreceptors, all over body in skin

50. 6 pts

Eccrine—secretes cooling sweat directly onto skin, mainly water and salt (3 pts)

Apocrine—stimulated during emotional stress/excitement, secretes into hair follicle, lipids and proteins (consumed by bacteria on skin to produce odor) (3 pts)

51. 9 pts

Anagen – growth phase (follicle produces new cells which push older cells up) (3 pts)

Catagen – transitional phase (hair follicle shrinks, lower part of hair is destroyed and dermal papilla breaks away) (3 pts)

Telogen – resting phase (hair does not grown but stays attached to follicle, hair shaft breaks and existing hair falls out) (3 pts)

52. 6 pts

Psoriasis: chronic, noninfectious, cycle of skin cell production increases by 3-4x normal, dead cell accumulates → dry and scaly skin

Vitiligo: autoimmune pigmentation disorder where melanocytes in the epidermis are destroyed (e.g. Michael Jackson)

53. 6 pts total – 2 pts each

a. Basal cell carcinoma
b. Squamous cell carcinoma
c. Melanoma

54. 6 pts total – 2 pts each

a. 3
b. 1
c. 2

IMMUNE SYSTEM

55. ___A_____

56. ___C_____

57. ___E_____

58. ___A_____

59. ___C_____

60. ___E_____

61. ___B_____

62. ___C_____

63. ___B_____

64. ___C_____

65. ___D_____

66. ___D_____

67. ___A_____

68. ___D_____

69. ___C_____

70. ___D_____

71. ___B_____

72. ___A_____

73. ___E_____

74. ___E_____

75. ___B_____

76. ___D_____

77. ___B_____

78. ___A_____

79. ___D_____

80. ___F_____

81. ___K_____

82. ___B_____

83. ___H_____

84. ___D_____

85. ___G_____

86. ___L_____

87. ___A_____

88. ___I_____

89. ___E_____

90. A: ___pharyngeal tonsil_____

    B: ___palatine tonsil_____

    C: ___lingual tonsil_____

91. A: _____tonsils_____

    B: _____lymph nodes_____

    C: _____thymus gland____

    D: _____bone marrow___

    E: _____spleen____

92. 6 pts, pick 2—3 pts each

Helper T cells – assist other white blood cells in the immunologic process (including maturation of B cells into plasma cells and memory B cells and activation of T cells and macrophages)

Cytotoxic T cells – destroy virally infected cells and tumor cells and play a role in transplant rejection

Memory T cells – antigen-specific T cells that persist long-term after an infection has been resolved that will provide memory of past infection and earlier defense for new infection

Regulatory T cells (suppressor) – maintain balance by shutting down T-cell mediated immunity towards the end of an immune reaction

93. 6 pts, 3 pts each

Plasma B cells produce antibodies

Memory B cells ready for the next invasion

94. 4 pts

Antigen presentation occurs when an antigen-glycoprotein combination capable of activating T cells appears in a cell membrane of a macrophage.

95. 8 pts total, 2 pts for definition, 2 pts each for each nonspecific defense, 2 pts for lines of defense

Nonspecific defenses do not distinguish one type of threat from another.

Physical barriers, phagocytes, immunological surveillance, interferons, complement, inflammatory response, fever

First and second lines of defense

96. 8 pts total, same breakdown as 95

Specific defenses protect against particular threats.

Cell-mediated, antibody-mediated immunity

Third line of defense

97. 4 pts total

Primary versus secondary responses

Primary: antibody titer (level of antibody activity) does not peak until 1-2 weeks after initial exposure, IgM first to appear (immediate but limited defense)

Secondary: memory B cells differentiate into plasma cells, respond faster,

98. 16 pts total, 4 pts per (2 pts definition, 2 pts example)

	Active	Passive
Natural	Develop your own antibodies Are exposed to pathogen	Receive antibodies from another source Infants from mothers' milk
Artificial	Deliberate exposure to pathogen Injection of weakened or killed pathogen	Deliberate exposure to causative agent Injection of protective gamma globulin

CARDIOVASCULAR SYSTEM

99. _____C_____

100. ____E_____

101. ____I_____

102. ____F_____

103. ____E_____

104. ____G_____

105. ____A_____

106. ____C_____

107. ____H_____

108. ____B_____

109. ____D_____

110. ____A_____

111. ____B_____

112. ____C_____

113. ____E_____

114. ____a, c, f_____

115. ____c, f, i_____

116. ____b, h, j_____

117. ____d, g_____

118. ____d, e, g_____

119. ____D_____

120. ____B_____

121. ____C_____

122. ____A_____

123. ___D_____

124. ___B_____

125. ___E_____

126. ___C_____

127. ___B_____

128. ___D_____

129. A: ___superior vena cava_____

B: ___aorta____

C: ___left pulmonary arteries____

D: ___pulmonary trunk___

E: ___left pulmonary veins__

F: ___left atrium___

G: ___semilunar valves___

H: ___mitral (atrioventricular) valve_

I: ___left ventricle___

J: ___septum_____

K: ___inferior vena cava_____

L: ___right ventricle___

M: __chordae tendineae_____

N: __tricuspid (atrioventricular) valve_

O: __right atrium___

P: __right pulmonary veins___

Q: __right pulmonary arteries___

130. 16 pts total

Action potential initiated in the SA node, spreads throughout the myocardium, passing from cell to cell by way of gap junctions. Spread throughout right atrium → left atrium simple—rapid enough that two atria are depolarized and contract at essentially the same time. Spreads to ventricles through AV node → bundle of His → Purkinje fibers (allow for essentially simultaneous depolarization).

131. 8 pts total (4 for each)

Epinephrine causes vasodilation (or vasoconstriction, depending on proportion of alpha- and beta-adrenergic receptors in the organ)

Vasopressin causes vasoconstriction

132. 6 pts total

Increase person's maximal oxygen consumption by increasing maximal stroke volume and hence cardiac output

Decreases the risk of atherosclerosis (decreases BP or causes slower rise in BP)

Decreases LDLs, decreases cholesterol, and increases HDLs

133. 12 pts total (6 for effects on blood pH, 6 for heart rate)

Blood pH goes up, heart rate goes down as a result

134. 10 pts total (5 for each of systolic/diastolic)

Korotkoff sounds

136.

a. 80 mL
b. 5660 mL
c. 40 mmHg
d. 94 mmHg
e. 1, 3
f. 2
g.
   i. P
   ii. PR interval
   iii. PR segment
   iv. QRS complex
   v. R
   vi. ST segment
   vii. Q
   viii. S
   ix. QT interval

x. T