

Anatomy and Physiology - Division C Condensed Key

University of Georgia Science Olympiad Regional Competition

February 22th, 2020



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Total Points: 222/222

Instructions and Clarifications:

- You have **50** minutes to finish this exam.
- You **may** split the exam but you are responsible for placing the pages back in order at the end of the testing session.
- **Tiebreakers** are considered in the following order: **#6, #18, #33, #57, #76**
- Write your **team number** on every page of the answer sheet.
- Anything written on the exam will **not** be graded. Only the **answer sheet** will be graded.
- If you have any questions or comments about the exam, feel free to email me at velasco.scienceolympiad@gmail.com. **Happy testing!**



I. Integumentary System

Multiple Choice: Choose the most appropriate answer for the questions below. Each question is worth **one** point. **(20)**

- | | | |
|------|-------|-------|
| 1. B | 8. E | 15. D |
| 2. D | 9. D | 16. B |
| 3. C | 10. A | 17. E |
| 4. E | 11. B | 18. B |
| 5. C | 12. A | 19. A |
| 6. D | 13. A | 20. C |
| 7. A | 14. D | |

Labeling: Label **Figure 1** and **Figure 2** in the image packet. Each letter is worth **one** point. **(14)**

21. **Figure 1**

- | | |
|----------------------------------|-------------------|
| A. Connective tissue root sheath | E. Matrix |
| B. Epithelial root sheath | F. Bulb |
| C. Medulla | G. Dermal papilla |
| D. Cortex | |

22. **Figure 2**

- | | |
|-----------------------|---|
| A. Stratum corneum | E. Stratum basale |
| B. Stratum lucidum | F. Epidermal ridge |
| C. Stratum granulosum | G. Corpuscle of touch in dermal papilla |
| D. Stratum spinosum | |

Pathology: Answer the following questions below about pathology in the most concise and specific way possible. Each question is worth **two** points. **(26)**

- | | |
|---|---|
| 23. superficial partial thickness/second-degree | 30. Boil |
| 24. 3 | 31. <i>Staphylococcus aureus</i> (accept <i>S. aureus</i>) |
| 25. full thickness/third-degree | 32. Carbuncle |
| 26. Fourth-degree | 33. Dermatitis |
| 27. Tinea pedis | 34. Atopic dermatitis |
| 28. Fungi | 35. Basal cell carcinoma/BCC |
| 29. Th1 | |



II. Skeletal System

Multiple Choice: Choose the most appropriate answer for the questions below. Each question is worth **one** point. **(20)**

- | | | |
|-------|-------|-------|
| 36. B | 43. D | 50. B |
| 37. D | 44. A | 51. D |
| 38. C | 45. D | 52. B |
| 39. A | 46. D | 53. E |
| 40. A | 47. E | 54. B |
| 41. A | 48. A | 55. C |
| 42. A | 49. C | |

Labeling: Label **Figure 3** and **Figure 4** in the image packet. Each letter is worth **one** point. **(26)**

56. Figure 3

- | | |
|-------------------------------|---|
| A. Lamina | I. Spinous process |
| B. Vertebral foramen | J. Vertebral body |
| C. Superior articular facet | K. Articular surface for anterior arch of atlas |
| D. Spinous process | L. Superior articular facet |
| E. Inferior articular process | M. Transverse foramen |
| F. Dens | N. Vertebral body |
| G. Lamina | O. Inferior articular facet |
| H. Transverse process | |

57. Figure 4

- | | |
|------------------------------------|--|
| A. Transverse process of vertebrae | G. Superior facet |
| B. Facet for tubercle of rib | H. Inferior facet |
| C. Body | I. Spinous process of vertebra (shortened) |
| D. Intercostal space | J. Sternum |
| E. Costal angle | K. Costal cartilage |
| F. Costal groove | |



Pathology: Determine what disease or injury is shown in the given images. Each image is worth **three** points. **(18)**

- | | |
|---------------------|---|
| 58. disc herniation | 61. medial collateral ligament (MCL) tear |
| 59. osteoarthritis | 62. anterior cruciate ligament (ACL) tear |
| 60. Fracture | 63. scoliosis |

III. Muscular System

Multiple Choice: Choose the most appropriate answer for the questions below. Each question is worth **one** point. **(20)**

- | | | |
|-------|-------|-------|
| 64. B | 71. D | 78. D |
| 65. E | 72. C | 79. A |
| 66. B | 73. D | 80. E |
| 67. D | 74. B | 81. E |
| 68. A | 75. B | 82. D |
| 69. C | 76. D | 83. D |
| 70. A | 77. B | |

Labeling: Label **Figure 5** and **Figure 6** in the image packet. Each letter is worth **one** point. **(28)**

84. **Figure 5**

- | | | |
|--------------------------|--------------------------|--------------------|
| A. I band | H. Z disc | O. M line |
| B. Z disc | I. I band | P. Sarcomere |
| C. H zone | J. Sarcomere | Q. Zone of overlap |
| D. M line | K. Z disc | R. H zone |
| E. A band | L. Titin filament/titin | S. I band |
| F. Thick filament/myosin | M. Thin filament/actin | T. A band |
| G. Thin filament/actin | N. Thick filament/myosin | |

85. **Figure 6**

- | | |
|---------------------------|--------------------------|
| A. Blood capillary | E. Synaptic end bulbs |
| B. Axon collateral/branch | F. Axon terminal |
| C. Somatic motor neuron | G. Synaptic end bulbs |
| D. Axon collateral/branch | H. Skeletal muscle fiber |



Pathology: Determine if the following statements about the muscular diseases are true or false. If the statement is true, write “**T**” on your answer sheet. If the answer is false, write “**F**” on your answer sheet. Each question is worth **two** points. **(30)**

- | | |
|-------|-------|
| 86. T | 94. T |
| 87. T | 95. T |
| 88. F | 96. F |
| 89. T | 97. T |
| 90. F | 98. F |
| 91. T | 99. F |
| 92. T | 100.F |
| 93. F | |

Matching: Match the following muscles to their corresponding origin. Each question is worth **two** points. **(20)**

- 101. H
- 102.C
- 103.A
- 104.D
- 105.B
- 106.F
- 107.I
- 108.J
- 109.G
- 110. E