



AP[®] Biology 2001 Scoring Commentary

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Question 1

Paper A - 10 Points

In Part A, this paper earned three points for the structure, function, and elaboration of the villus, three points for the capillary, and two points for the neuron. In Part B, the student earned a point each for the contribution to the system of the villus, the capillary, and the neuron. Eleven points were earned, so the maximum of ten was awarded.

Paper B - 7 Points

In Part A, this paper earned structure, function and elaboration points for the alveolus. It also earned structure and function points for the villus, and the capillary. In Part B, the paper earned no points. It is worth noting that the student spent time on drawings not referred to in the text that did not earn any points.

Paper C - 5 Points

This paper earned structure, function, and elaboration points for the capillary in Part A. Although the student also discussed the alveolus and the neuron, there was not enough specific information to earn points. In Part B, the student earned one point each for the contribution of the capillary and the alveolus to the systems to which they belong.

Question 2

Paper A - 10 points

The student earned the variation point by linking genetic change in the previous sentence to characteristics. The student earned the differential reproduction point for indicating that one variant is more successful than another. The paper also earned a generation time point for a clear implication that traits accumulate over time, and an elaboration point for a good example. The student earned a point for the idea that the resistance gene is present in the population before exposure and another for the link to natural selection. Another point was for the example, with linkage. The statement about crossbreeding earned a definitional point, a nice example earned a point, and a final definitional point was awarded.

Paper B - 8 points

This paper earned the variation point for the concept that it takes awhile to get there, the differential point for the information on reproduction, and a point for the definition of convergent evolution. The student earned a point for a weak example that was clearly linked, a point for resistance, and the linkage point. Finally, the student earned points for the barrier effect and for speciation.

Paper C - 5 points

This student earned the reproduction point, the definitional point and the linkage point. A second definition was provided and earned a point, along with the linkage point for the second example.

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Question 3

Sample A - 9 Points

This student earned four points on the graph: one for the orientation, one for the correct graphing, one for plotting the data correctly, and one for the predicted overcast curve. In Part B, the student also earned the interaction point, the photosynthesis point, and a point for explaining the predicted results for an overcast day. No point could be awarded for respiration. Finally the paper earned a point for the Part C nutrient prediction, and a point for the explanation of this.

Sample B - 8 Points

This student earned four points on the graph: one for the orientation, one for the correct graphing, one for plotting the data correctly, and one for the predicted overcast curve. In Part B, the student earned an elaboration point for the description of the splitting of water in photosynthesis, the respiration point, the interaction point, and the prediction explanation point. No points were earned for Part C.

Sample C - 7 Points

This student earned two points on the graph, one for orientation and one for the prediction on an overcast day. There was no indication of oxygen on the vertical axis, and there was an improper extrapolation at the ends of the curve, so more points could not be awarded in Part A. In Part B, the paper also earned a point for photosynthesis, and a point for the explanation of the curve. Finally, in Part C, the student earned a point for the explanation, a point for the prediction, and a point for elaboration.

Question 4

Sample A - 10 points

On the first page, one point was earned for stating that proteins are made of amino acids. An additional point was earned for correctly identifying the amino acid functional groups. If the student had not reached the “Chemical composition” maximum of 2, another point could have been earned for the role of R groups in distinguishing different amino acids. A point was awarded for the correct description of secondary structure. The description of the role of disulfide bridges earned another point. By now, the student reached the maximum number of points for Part A, otherwise he or she could have received another point for the correct description of quaternary structure.

The global point for information flow is earned at the top of the second page. The description of the tRNA anticodon binding the mRNA earned a second point. The role of mRNA as coding for the amino acid sequence earned the third point, and the fourth point in part B was earned for stating that rRNA is a component of ribosomes.

Two points were earned for stating that membrane proteins are involved in cell-cell recognition and enzymatic activity; the internal maximum prevented further points being awarded for connection to the cytoskeleton and other cells. On the third page, one point was earned for the explanation that transport may require energy, and a fourth point for the description of integral and peripheral proteins.

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Question 4 (cont.)

Sample B - 6 points

One point was earned on the first page for stating that proteins are made of amino acids. Describing primary structure as the order and number of amino acids earned the second point. A third point was earned for identifying pleated sheets as part of secondary structure. The fourth point was earned for stating that tertiary structure is due to hydrogen and sulfide bonds.

A global information point was earned for stating that the sequence of bases in the DNA determines the order of the amino acids. No further points were earned in this section because the remainder of the information was incorrect.

One point was earned for a description of antiport on the second page. The student also provided a correct description of ATP synthase, but did not earn a point since only one elaboration point can be earned in Part C.

Sample C - 3 points

No points were awarded for chemical composition since the student did not identify the R group. One point was earned on the first page for describing secondary structure by helices and pleated sheets. A point was given for the globular description of tertiary structure and a third point for quaternary structure bonding (sulfur cross-bonds).

No points were earned in either Part B (information is incorrect) or part C (information is too general or incorrect).