PRACTICE TEST 1
BIOLOGY-E

ANSWER KEY

Part A

1. C	11. A	21. A	31. E	41. D	51. D
2. D	12. C	22. A	32. B	42. E	52. B
3. B	13. B	23. D	33. A	43. D	53. A
4. E	14. A	24. E	34. E	44. C	54. A
5. B	15. D	25. C	35. B	45. B	55. B
6. C	16. B	26. D	36. B	46. B	56. B
7. A	17. B	27. A	37. A	47. A	57. C
8. D	18. B	28. D	38. B	48. B	58. D
9. C	19. D	29. D	39. B	49. E	59. A
10. B	20. B	30. A	40. C	50. D	60. E

Part B

61. B	71. A
62. B	72. B
63. C	73. D
64. B	74. E
65. E	75. C
66. D	76. A
67. C	77. B
68. D	78. C
69. D	79. E
70. B	80. B

SCORE SHEET

Number of questions correct: _____

Less: 0.25 × number of questions wrong: _____

(Remember that omitted questions are not counted as wrong.)

Raw score: _____

Raw Score	Scaled Score	Raw Score	Scaled Score	Raw Score	Scaled Score	Raw Score	Scaled Score	Raw Score	Scaled Score
80	800	57	690	34	520	11	380	−12	250
79	800	56	680	33	520	10	370	−13	240
78	800	55	670	32	510	9	370	−14	240
77	800	54	670	31	510	8	360	−15	230
76	800	53	660	30	500	7	350	−16	230
75	800	52	650	29	500	6	350	−17	230
74	800	51	650	28	490	5	340	−18	220
73	790	50	640	27	490	4	330	−19	220
72	790	49	630	26	480	3	330	−20	220
71	780	48	620	25	480	2	320		
70	780	47	620	24	470	1	320		
69	770	46	610	23	470	0	310		
68	760	45	600	22	460	−1	310		
67	760	44	600	21	450	−2	300		
66	750	43	590	20	440	−3	300		
65	740	42	580	19	440	−4	290		
64	740	41	580	18	430	−5	290		
63	730	40	570	17	420	−6	280		
62	720	39	560	16	420	−7	270		
61	710	38	560	15	410	−8	270		
60	710	37	550	14	400	−9	260		
59	700	36	540	13	400	−10	260		
58	700	35	530	12	390	−11	250		

Note: This is only a sample scoring scale. Scoring scales differ from exam to exam.

ANSWERS AND EXPLANATIONS

Part A

1. **C** Chloroplasts are the organelles that contain chlorophyll and other photopigments used during photosynthesis.

2. **D** The endoplasmic reticulum is an extensive network of membranes that are in the cytoplasm. The endoplasmic reticulum is a transportation network to move molecules around the cell.

3. **B** The mitochondria are the site where ATP is produced, providing energy for cellular functions.

4. **E** The Golgi apparatus consists of flattened sacs that collect and distribute molecules produced by cellular functions.

5. **B** Proteins are long chains of amino acids linked together. Proteins serve many different functions in cells.

6. **C** Carbohydrates are used by the body for energy. Carbohydrates range from such simple sugars as glucose to complex polysaccharides such as starch.

7. **A** Lipids are a diverse class of organic compounds that include olive oil, vegetable oil, and even beeswax. Lipids do not dissolve in water.

8. **D** Symbiosis is two or more organisms that live together in a long-term association. Symbiosis has different forms depending on whether organisms benefit from the relationship or not.

9. **C** Parasitism is a type of symbiotic relationship where one organism benefits at the expense of the other organism. Tapeworms are an example. Tapeworms get food from the digestive system of their host.

10. **B** Mutualism is a type of symbiotic relationship where both organisms benefit from the relationship. Some ants and aphids are an example. The ants care for and protect the aphids. In return, the aphids provide the ants with a sweet liquid.

11. **A** Commensalism is a type of symbiotic relationship where one organism benefits, while the other neither benefits nor is harmed. Barnacles growing on a whale is an example of commensalism. The barnacles are carried across the oceans while the whale is not affected.

12. **C** A tissue is a group of cells that are serve a similar function.

13. **B** A cell is the smallest unit of life capable of carrying out all functions.

14. **A** Organs are composed of a group of tissues. The tissues collectively work to perform different functions within the organ.

15. **D** Organ systems are groups of organs that work together to make up a system.

16. **B** Protists are classified by the way they move or method of locomotion. The methods are pseudopods, cilia, flagella, or nonmotile.

17. **B** The cerebellum is a small region at the back of the brain. The cerebellum controls smooth, coordinated movements, helps maintain muscle tone, posture, and balance.

18. **B** Gymnosperms and angiosperms are advanced plants. They have many similarities including their leaves, stems, roots, and reproduction with seeds.

19. **D** Most organisms do not have the ability to change their external environments.

20. **B** An enzyme acts as a catalyst for the biochemical reaction. Catalysts lower the activation energy required for a reaction but they are not changed in any way during the reaction.

21. **A** Chemotrophs are able to breakdown inorganic chemical molecules to obtain energy. This has only been found in the Kingdom Monera. Some members of this kingdom are able to break down hydrogen sulfide to obtain energy. Chemotrophs do not depend on sunlight for energy.

22. **A** Birds such as hawks and falcons have strong feet with long talons for grasping prey.

23. **D** In RNA, uracil replaces thymine and is complimentary to adenine.

24. **E** There are many causes of mutations in cells. The most common are the random processes that take place in cells.

25. **C** Amphibians were the first to have a three-chambered heart. This advancement allowed the circulatory system to include lungs.

26. **D** Complete metamorphosis occurs when an organism has a different body shape at different stages of its life cycle. For example, in butterflies, the larva state, called a caterpillar, is very different from the adult butterfly.

27. **A** Photosynthesis is the fixing of atmospheric carbon into molecules that can be used by organisms.

28. **D** Microspores result from meiosis that takes place in the pollen cone of a gymnosperm. The microspores develop into pollen grains, or more correctly, microgametophytes.

29. **D** Bacteria break down or decompose organic matter. Because of their actions, they are considered decomposers in an ecosystem.

30. **A** Ground tissues in plants serve many different functions. Ground tissues do not protect other tissues.

31. **E** The proper way of writing a species name is with the genus capitalized and the specific epithet lower case. The entire name is written in italics or, in older texts, underlined.

32. **B** When gametes are formed in parents; each gamete has half the genetic material of the parent. When the gametes unite, the resulting offspring will receive half the genetic material of each parent.

33. **A** An ecosystem only has so much energy available to pass up to each level of the trophic pyramid. Only about 10% of the energy is actually passed up to the next higher level. When one level of the pyramid is larger than the level below it, there must be a shift to reduce the energy demands.

34. **E** The haploid number of chromosomes is the number of pairs found in an organism. In this case a haploid number of 28 translates to 28 pairs or 56 chromosomes.

35. **B** In this type of cross, the offspring get one allele from each parent. The result is that all offspring will be Yy.

36. **B** The law of independent assortment only applies to traits that are on different chromosomes. The common traits in pea plants all happen to be on different chromosomes so this law applies.

37. **A** Evolution affects populations, not individuals. Individuals can have traits that give them an advantage, and they may pass the traits on, but they do not evolve.

38. **B** The ball-and-socket joint is the type of joint found in the shoulder. The joint allows rotational movement.

39. **B** When a cell is placed in a very salty solution, water moves from the area of higher concentration, inside the cell, to the area of lower concentration, outside the cell.

40. **C** Both codominant traits are always expressed. In horses, the offspring has both red and white hairs.

41. **D** Species that are very closely related have very similar DNA with only minor differences. They are related through a common ancestor.

42. **E** Niche overlap is a form of competition instead of reproductive isolation.

43. **D** Glucose and oxygen are products of photosynthesis. They enter the cellular respiration pathway where they are used to release energy.

44. **C** The vascular tissue in plants moves water up the plant from the roots and moves sugars from the leave, throughout the plant, and down to the roots.

45. **B** The phloem becomes the bark in woody plants.

46. **B** Jumping genes are genes that easily jump or move from one location on a chromosome to another. Jumping genes are what cause some corn to have multicolored kernels.

47. **A** Homologous structures are structures that are similar in two different species. In this case, the bones in the human arm are similar to those in a bat. The finger bones in a human are similar to the thin bones in the bat wing.

48. **B** Inserting is a type of mutation. As the name implies, a repeat of a sequence is inserted into a different chromosome.

49. **E** In animal cells, when fermentation takes place, lactic acid is formed.

50. **D** Disruptive selection takes place when some environmental pressure works to make the extremes in variation the most successful organisms. These organisms are those that reproduce and pass their traits to their offspring.

51. **D** Density-dependent factors are ones that affect a population differently depending on its size and density.

52. **B** Crossing over is a process where genetic material is exchanged by two different chromosomes during meiosis. This is similar to shuffling a deck of cards and increasing variation in the genes.

53. **A** Genes are segments on DNA that on a chromosome that have a specific function.

54. **A** Streptococci means long chain of small round bacteria. *Strepto* refers to a chain and *cocci* refers to round.

55. **B** The concept of the survival of the fittest states that those best able to survive are the ones most likely to reproduce and pass on their genes.

56. **B** The ecological concept of competition is when two species try for a limited resource. The species best suited to exploit the resource gets the larger share of the resource.

57. **C** Preserves usually work better as larger areas. The same amount that is fragmented does not have the same healthy exchange of genetic material as one large area.

58. **D** Mendel explained that different traits are inherited independently if they are found on different chromosomes.

59. **A** During meiosis, three of the resulting cells are called polar bodies and are discarded. Only one of the cells becomes an egg.

60. **E** Bacteria are prokaryotes because they lack a true nucleus and membrane bound organelles.

Part B

61. **B** The cell is the smallest unit of life. When a group of similar cells works together, it is called a tissue. Groups of tissues are linked together to form organs. Organs that work together are called organ systems.

62. **B** The dispersion of a population is a way of describing how members of a population are spread out in their habitat.

63. **C** Adaptive radiation describes how a species moves into new, unfilled niches and becomes more specialized to fill each niche.

64. **B** Natural selection works best in a rapidly changing environment when an organism is capable of producing many offspring in a short amount of time.

65. **E** Bryophytes do best in an environment that is constantly wet. Of the ones listed, the mouth of a spring is the best habitat.

66. **D** Abiotic factors are things that are not living. Vegetation is living; therefore it is a biotic factor.

67. **C** Each trophic level only passes about 10% of its energy to the next higher level.

68. **D** Temperature and moisture are the two main controlling factors that determine biome type. Plants and animals have specific requirements on needs and these are the most basic.

69. **D** Tropical rain forests are found in warm regions near the equator.

70. **B** The taiga and tundra are both found in cold climates. The permafrost is much shallower in tundra so it cannot support large plants.

71. **A** Tropical rain forests are found at the equators. Deserts are found in the midlatitudes. Taiga is found at high latitudes.

72. **B** Grain crops are grasses so they grow best in a grassland biome.

73. **D** The taiga and temperate deciduous forest have similar rainfall amounts. The main difference is the temperature.

74. **E** The tropical rain forest has a warm temperature year round, which gives it a high biodiversity.

75. **C** The chart clearly shows a large drop in number of genera at the end of the Permian.

76. **A** At the end of the Silurian, there was a big increase in the number of genera of brachiopods.

77. **B** Of the times listed, the Silurian is the only one where all three brachiopod groups are present.

78. **C** DNA is replicated during the S, or synthesis phase of the cell cycle.

79. **E** Telophase takes place close to the end of mitosis. The cell is getting ready to split into two daughter cells.

80. **B** Prophase occurs at the beginning of mitosis. The chromosomes condensing is the first step in preparation for mitosis.