## THE BIOLOGY COURSE POST-TEST

### CHAPTER 1-2: BIOLOGICAL ORGANIZATION

1. About $\boxed{\text{A}}$ % of the atoms in living things are carbon, hydrogen, oxygen, nitrogen, sulfur, and phosphorous.
   
   \[
   \begin{array}{cccc}
   \text{A} & 51 & \text{B} & 75 \\
   \text{C} & 85 & \text{D} & 99 \\
   \end{array}
   \]

2. The human body consists of approximately $\boxed{\text{A}}$ trillion cells.
   
   \[
   \begin{array}{cccc}
   \text{A} & 100 & \text{B} & 80 \\
   \text{C} & 20 & \text{D} & 50 \\
   \end{array}
   \]

3. Phospholipids are basically made up of a $\boxed{\text{A}}$ molecule with a phosphate group attached to the first carbon at the extreme right.
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{glycerol} & \text{B} & \text{dihydroxyacetone phosphate} \\
   \text{C} & \text{triosephosphate isomerase} & \text{D} & \text{glyceraldehyde 3-phosphate} \\
   \end{array}
   \]

4. A protein may contain as few as $\boxed{\text{A}}$ amino acids, or it may contain thousands.
   
   \[
   \begin{array}{cccc}
   \text{A} & 25 & \text{B} & 35 \\
   \text{C} & 10 & \text{D} & 50 \\
   \end{array}
   \]

5. In the $\boxed{\text{A}}$ structure, multiple polypeptides are organized together.
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{quaternary} & \text{B} & \text{quadrangle} \\
   \text{C} & \text{quadplex} & \text{D} & \text{quadrille} \\
   \end{array}
   \]

6. The $\boxed{\text{A}}$ reticulum (ER) is a system of interconnected membrane channels in the cytosol.
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{enteron} & \text{B} & \text{enterocoel} \\
   \text{C} & \text{endoplasmic} & \text{D} & \text{enterotome} \\
   \end{array}
   \]

7. The centers of energy metabolism in the plant cell are the:
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{ribosomes} & \text{B} & \text{mitochondria} \\
   \text{C} & \text{plastids} & \text{D} & \text{lysosomes} \\
   \end{array}
   \]

8. The $\boxed{\text{A}}$ body is made up of a series of about ten to twenty flattened membranes.
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{Gilbert} & \text{B} & \text{Golgi} \\
   \text{C} & \text{Golgarian} & \text{D} & \text{Goletti} \\
   \end{array}
   \]

9. Active transport involves special proteins called $\boxed{\text{A}}$ proteins.
   
   \[
   \begin{array}{cccc}
   \text{A} & \text{transference} & \text{B} & \text{kinetic} \\
   \text{C} & \text{transport} & \text{D} & \text{locomotion} \\
   \end{array}
   \]

10. One type of endocytosis is called $\boxed{\text{A}}$, in which nutrients are taken into the cell.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{pinocytosis} & \text{B} & \text{pericytosis} \\
    \text{C} & \text{nutricytosis} & \text{D} & \text{vitacytosis} \\
    \end{array}
    \]

11. Solar energy is trapped in a photosynthesizing organelle of the plant called the:
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{mitochondrion} & \text{B} & \text{adenosine diphosphate} \\
    \text{C} & \text{ribosome} & \text{D} & \text{chloroplast} \\
    \end{array}
    \]

12. Carbohydrates are transported to an organelle called the $\boxed{\text{A}}$, where they are combined with oxygen molecules during respiration.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{mitochondrion} & \text{B} & \text{ribosome} \\
    \text{C} & \text{adenosine diphosphate} & \text{D} & \text{chloroplast} \\
    \end{array}
    \]

13. The two main processes of photosynthesis involve a series of energy-fixing (light) reactions and $\boxed{\text{A}}$ fixing (dark) reactions.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{oxygen} & \text{B} & \text{carbon} \\
    \text{C} & \text{zinc} & \text{D} & \text{heat} \\
    \end{array}
    \]

14. An important part of cellular respiration if the Krebs cycle (also called the $\boxed{\text{A}}$ Cycle).
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{Citric Acid} & \text{B} & \text{Oxalic Acid} \\
    \text{C} & \text{Acetic Acid} & \text{D} & \text{Uric Acid} \\
    \end{array}
    \]

15. For every molecule of acetyl CoA that enters the Krebs cycle, $\boxed{\text{A}}$ NADH molecules (among other molecule types) are produced.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{four} & \text{B} & \text{three} \\
    \text{C} & \text{two} & \text{D} & \text{five} \\
    \end{array}
    \]

16. The two major periods of the cell cycle are interphase and the M phase (also known as the phase of $\boxed{\text{A}}$).
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{nuclear fusion} & \text{B} & \text{mitosis} \\
    \text{C} & \text{meiosis} & \text{D} & \text{cell division} \\
    \end{array}
    \]

17. During the M phase, the second main process is called $\boxed{\text{A}}$, in which the cell actually splits.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{metaphase} & \text{B} & \text{anaphase} \\
    \text{C} & \text{cytokinesis} & \text{D} & \text{prophase} \\
    \end{array}
    \]

18. In metaphase, the homologous chromosomes line up along the $\boxed{\text{A}}$ of the cell.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{vacuoles} & \text{B} & \text{Golgi body} \\
    \text{C} & \text{equator} & \text{D} & \text{nuclear membrane} \\
    \end{array}
    \]

19. Meiosis is linked to sexual reproduction in plants and animals because $\boxed{\text{A}}$ cells join to form a fertilized diploid cell.
    
    \[
    \begin{array}{cccc}
    \text{A} & \text{haploid} & \text{B} & \text{chromatid} \\
    \text{C} & \text{centriole} & \text{D} & \text{monoploid} \\
    \end{array}
    \]
20. The principles of genetics were established in the ________ by Gregor Mendel.
   A 1880s  B 1860s  C 1920s  D 1930s

21. Gregor Mendel performed a series of experiments using the common ________ plant.
   A garden tomato  B garden pea  C garden squash  D garden zucchini

22. The testcross is performed by taking the individuals of unknown genotype and crossing them with homozygous recessive individuals.
   A True  B False

23. The blood types A, B, AB, and O result from the pairings of ________ alleles of a single gene.
   A six  B five  C four  D three

24. Only ________ alleles can exist in a particular individual.
   A eight  B seven  C two  D five

25. Human cells have ________ chromosomes in total, but these chromosomes can be matched in pairs: there are two of each type.
   A thirty-six  B twenty-two  C forty-six  D forty-two

26. In the human male, the Y chromosome is ________ any of the other chromosomes.
   A equal size to  B significantly longer than  C significantly smaller than  D much wider than

27. When the chromosomal alteration called inversion takes place, a segment of chromosome turns around:
   A 135 degrees  B 180 degrees  C 45 degrees  D 90 degrees

28. Abnormal chromosome numbers are called:
   A aneuploidies  B chromatoidals  C chromadysnumerals  D achromataxis

29. In people with Down’s Syndrome, there is an extra chromosome #:
   A 15  B 4  C 24  D 21

30. DNA the is genetic material of organisms, while ________ is used during the construction of proteins.
   A a phosphate group  B RNA  C CNA  D thymine

31. Unlike the DNA of eukaryotic cells, the genetic material of bacteria exists as a ________ molecule of DNA.
   A circular  B octahedral  C linear  D tetrahedral

32. The replication of DNA in the prokaryotic chromosome begins at a point called the ________ of replication.
   A center  B origin  C base  D root

33. More than two meters of DNA fits into forty-six chromosomes in a nucleus that’s less than ________ micrometers in diameter.
   A two  B twenty  C five  D three

34. After the announcement of the structure of DNA by ________, scientists set out to confirm that DNA is the basis for heredity.
   A Watson and Crick  B Huber  C Hashimoto  D Mori and Ueno

35. The fact that genes direct the synthesis of proteins, and specifically enzymes, was first realized in the:
   A 1930s  B 1950s  C 1910s  D 1940s

36. The synthesis of RNA is mediated by an enzyme called:
   A RNase inhibitor  B alkaline phosphatase  C β-Agarase  D RNA polymerase

37. In eukaryotic cells, the processed mRNA leaves the nucleus and enters the cytoplasm – then takes part in a process called protein:
   A integration  B synthesis  C interfusion  D amalgamation

38. A human cell contains about ________ genes.
   A ten thousand  B five hundred  C one hundred thousand  D one million

39. In the ________, the French investigators François Jacob and Jacques Monod researched gene regulation in bacteria.
   A 1940s  B 1950s  C 1910s  D 1920s

CHAPTER 3-1: MENDELIAN GENETICS

CHAPTER 3-4: THE TESTCROSS

CHAPTER 3-6: MULTIPLE ALLELES

CHAPTER 3-8: SEX DETERMINATION

CHAPTER 3-10: CHROMOSOMAL ALTERATIONS

CHAPTER 4-1: STRUCTURE OF DNA

CHAPTER 4-3: PROKARYOTIC DNA REPLICATION

CHAPTER 4-5: DNA AND CHROMOSOMES

CHAPTER 4-7: DNA AND PHENOTYPE

CHAPTER 4-9: PROTEIN SYNTHESIS (TRANSCRIPTION)

CHAPTER 4-11: GENE REGULATION (LACTOSE)
41. When a strand of DNA is transcribed, a molecule of _______ (mRNA) is formed.
A metallocidal  B messenger  C metagenetic  D metathetic

42. DNA fingerprinting is an identification procedure that requires _______ of blood.
A only a single drop  B 5 ml  C 20 ml  D at least 40 ml

43. The DNA fragments that result from restriction enzyme activity are known as restriction fragment _______ polymorphisms, or RFLPs.
A latent  B loop  C lipase  D length

44. A(n) _______ molecule is a synthetic RNA molecule that combines with the mRNA molecule found in a cell and renders it inactive.
A antimorphic  B absouten  C obsomorphic  D antisense

45. The work of Alfred Russell _______ and Charles Darwin resulted in the concept of evolution.
A Smith  B Smyth  C Wallace  D Pepping

46. Darwin’s _______ work, The Origin of Species, remains the definitive book describing evolution.
A 1820  B 1843  C 1859  D 1872

47. Comparative anatomy is basically the science of comparing the _______ of present day organisms.
A physical features  B genetic sequence  C physical abilities  D gene types

48. Genetic variation is brought about by the processes of gene flow and:
A genetic morphing  B climate changes  C population behavior  D genetic drift

49. Adaptations may be useful, detrimental, or they may have no effect on a population at all.
A True  B False

50. The gene _______ is the total number of genes in a population.
A tub  B pool  C variance  D diversification

51. When the gene frequencies of a population _______, genetic drift has taken place.
A decrease  B increase  C change  D do not change

52. Both Darwin and Wallace believed that _______ is the primary mechanism in the evolution of a new species.
A genetic mutation  B genetic anomalies  C population adaptation  D natural selection

53. A species is generally defined as a group of interbreeding individuals in a population, and the process of species formation is called:
A specification  B speciation  C specifomia  D specionia

54. _______ occurs when reproduction is prevented between the 3 original members of the population because of a chromosomal mutation.
A Sympatric speciation  B Sympatric specification  C Sympatic specionia  D Sympatic specfomia

55. The continents of the world ride on huge land masses, called _______, so that as they move — the continents are carried along with them.
A cores  B mantles  C plates  D lithospheres

56. The landmass of Pangea remained whole until the _______ period, about 135 million years ago.
A Paleogene  B Jurassic  C Cretaceous  D Triassic

57. Eukaryotic cells date back about _______ billion years and multicellular organisms first appeared about a billion years ago.
A 2.5  B 3.5  C 5  D 1.5

58. Billions of years ago, as primordial Earth traveled through space, its gases contracted to form a hot, dense core — its temperature was:
A 100 – 300 degrees  B 900 – 1200 degrees  C 500 – 700 degrees  D several thousand degrees
59. The first cells to exist on earth were very simple prokaryotic cells that were similar to today’s:
A bacteria  B virus  C nerve cells  D oocytes

60. The _______ theory is one of a few theories that describe how eukaryotic cells may have arisen from prokaryotic cells.
A homeostasis  B endosymbiont  C bioenergetic  D inheritance

CHAPTER 6-5: THE CLASSIFICATION SCHEME

61. Beginning in the 1950s, biologists recognized that all living things fall into five broad categories called:
A phyla  B kingdoms  C classes  D species

62. Viruses are very simple organisms. They consist of little more than nucleic acid enclosed in a coating of:
A carboxyl  B hydroxyl  C protein  D amino acids

63. The viruses that cause herpes simplex, infectious mononucleosis, chicken pox, and AIDS are all _______ viruses.
A helical  B cylinder  C spherical  D icosahedral

CHAPTER 6-7: VIRUSES

64. The Kingdom _______ includes three major groups: protozoa, slime molds, and single-celled (unicellular) algae.
A Protista  B Fungi  C Plantae  D Monera

65. The flagellate, Giardia, is distinct because of its _______ nuclei.
A two  B three  C four  D seven

CHAPTER 6-9: PROTOZOA

66. The alga Chondras is a type of _______ alga, also called rhodophytes.
A orange  B blue  C green  D red

CHAPTER 6-11: SIMPLE ALGAE

67. Scientists recognize _______ divisions of fungi.
A five  B seven  C twelve  D three

CHAPTER 6-12: KINGDOM FUNGI

68. Stems that grow _______ and underground are called rhizomes – as found in plants such as ferns and potatoes.
A in a helical fashion  B in the air  C horizontally  D vertically

CHAPTER 7-1: STRUCTURE OF A FLOWERING PLANT

69. The first floral organs to develop are leaf-like _______, which envelop the flower bud.
A peduncles  B receptacles  C sepals  D ovaries

CHAPTER 7-3: LIFE CYCLE OF A FLOWERING PLANT

70. The female reproductive organs in the plant consist of the:
A filament  B pistil  C stamen  D petal

CHAPTER 7-5: LIFE CYCLE OF A FERN

71. The fern is a primitive, vascular plant.
A True  B False

CHAPTER 7-7: THE ROOT

72. Ferns are found primarily in:
A dry climate  B temperate climate  C cold climate  D the tropics

CHAPTER 7-9: THE LEAF

73. The central core of the root is occupied by a complex group of tissues known collectively the vascular:
A box  B sphere  C wedge  D cylinder

CHAPTER 7-11: TRANSPORT IN PLANTS

74. In the leaf, the _______ layers protect the inner tissues of the leaves and secrete the waxy cuticle.
A palisade  B mesophyll  C epidermal  D spongy

CHAPTER 7-12: PLANT HORMONES

75. Xylem and phloem are the two components of the plant’s _______ system.
A ground  B vascular  C dermal  D structure

76. Within the plant leaves, water enters and then exits cells known as _______ cells.
A source  B base  C core  D periphery

77. _______ acid is responsible for the closing of stomata on the undersides of leaves.
A Abscisic  B Chorismic  C Isochorismic  D Salicylic
78. Sponges are able to maintain their shape because they possess fibers called:
A striated pores  B spicules  C cilia  D amoebocytes

79. There are approximately ——— species in the phylum Platyhelminthes.
A 200  B 20  C 20,000  D 2,000

80. The ——— is a free-living flatworm that moves along rock surfaces by gliding or rhythmic muscle waves.
A scolex  B proglottid  C planarian  D fluke

81. Members of the phylum Chordata include approximately ——— different species of fish, birds, reptiles, amphibians, and mammals.
A 450  B 450,000  C 45,000  D 4,500

82. In the octopus and ———, the mantle is modified into a propulsive device.
A squid  B angler fish  C jelly fish  D jaw fish

83. The sympathetic nervous system transmits impulses that stimulate organs.
A True  B False

84. In the ear, the ——— is a flexible rod of tissue found in the embryo, beneath the nerve cord.
A root sheath  B stratum basale  C dorsal nerve cord  D notochord

85. All conscious processes occur in the:
A hypothalamus  B medulla oblongata  C pons  D cerebrum

86. The part of the hair that projects above the body surface is called the:
A arrector pili  B stratum corneum  C shaft  D root

87. Basophils constitute about ———% of the total WBCs and are believed to function in allergic reactions, clotting, and inflammation.
A 8  B 12  C 1  D 22
CHAPTER 9-17: THE DIGESTIVE SYSTEM

97. Exocrine glands of the _______ deliver their enzyme secretions into the first part of the small intestine.
   A stomach  B liver  C pancreas  D gallbladder

98. Within the nasal passage, outcroppings of bone (called _______) from the lateral wall divide the main passageway into smaller ones.
   A nasal labyrinth  B ethmoid sinuses  C sphenoid sinuses  D nasal conchae

99. Below the pharynx is the _______, which is the first portion of the passageway that leads to the lungs.
   A larynx  B trachea  C left and right bronchus  D epiglottis

CHAPTER 9-19: THE RESPIRATORY SYSTEM

100. The main circulatory vessel that transports blood to the kidney is the _______ artery.
    A Glomerular  B renal  C abdominal  D suprarenal

101. Immediately adhering to the kidney surface if the _______, which provides an impenetrable barrier to infection of the kidney surface.
    A renal fascia  B adipose cavity  C renal capsule  D adrenal gland

CHAPTER 9-21: THE URINARY SYSTEM

102. Covering the glans in the uncircumcised penis is a portion of skin tissue called the:
    A epididymis  B corona  C prepuce  D vas deferens

103. The _______ gland adds alkaline secretions to the sperm – and is also known as Cowper's glands.
    A bulbourethral  B prostate  C seminal  D corona

CHAPTER 10-3: GAMETOGENESIS

104. The twenty-three chromosomes from the sperm cell unite with the twenty-three chromosomes of the egg cell to form a:
    A spermatid  B oocyte  C polar body  D zygote

CHAPTER 10-5: HUMAN EMBRYONIC DEVELOPMENT

105. The _______ week embryo is about 17 mm in length. Its back has straightened and its muscles have differentiated.
    A seven  B seventeen  C twelve  D five

CHAPTER 10-7: EMBRYONIC MEMBRANES

106. The _______ provides a surface for the exchange of gases, nutrients, and wastes between the mother and the embryo.
    A uterus  B chorion  C allantois  D amnion

107. The _______ is a sac that surrounds the embryo. It cushions the embryo and enables it to maintain a constant temperature.
    A uterus  B chorion  C allantois  D amnion

CHAPTER 11-1: ECOLOGICAL COMMUNITIES

108. The term ecology is partly derived from the Greek word _______, meaning "a house or place where one lives."
    A omni  B oikis  C kine  D log

109. _______ such as bacteria and fungi process / consume the remains of animals and plants and are critical to elemental cycles in the soil.
    A Decomposers  B Producers  C Secondary consumers  D Tertiary consumers

CHAPTER 11-3: ECOLOGICAL NICHE

110. Ecologist Robert H. _______ described habitats as subdivided so that each species comes to live where it will survive and propagate.
    A MacArthur  B Ayton  C Brent  D Chadwick

CHAPTER 11-5: AQUATIC BIOMES

111. The _______ zone extends from near the shoreline to where the continental slope ends — beyond the continental shelf.
    A euphotic  B limnetic  C aphotic  D neritic

CHAPTER 11-6: THE ENERGY PYRAMID

112. In the oceanic community, the entire collection of phytoplankton is known as:
    A bioplanktopia  B planktomass  C biomass  D planktootot

CHAPTER 11-8: A FOOD WEB

113. The sequence of relationships between predators and prey in a community manifests itself in a system known as the:
    A consumer pyramid  B producer sequence  C survival chain  D food chain

114. Food chains are deceptively simple, and they do not necessarily reflect all of the interrelationships in nature.
    A True  B False

CHAPTER 11-10: THE CARBON CYCLE

115. Essentially, the same pool of nutrients has circulated for the billions of years that the Earth has been in existence.
    A True  B False

116. Carbon enters the biotic (living) part of the ecosystem through:
    A respiration  B photosynthesis  C decay  D combustion
117. Phosphorus is one of the critical elements in biological molecules. For example, it is a component of triphosphate (ATP).
A) americium  B) astatine  C) adenosine  D) actinium

118. The ______ is the primary producer in the phosphorus cycle.
A) soil  B) insect  C) plant  D) land animal

119. Approximately ______ million years ago, huge quantities of carbon, in the form of dead plants and animals were buried in the Earth.
A) 50  B) 300  C) 700  D) 100

120. During the industrial revolution, clouds of carbon dioxide began to accumulate, causing the atmospheric content of carbon dioxide to:
A) increase by about 25%  B) increase by about 10%  C) increase by about 5%  D) increase by about 2%
THE BIOLOGY COURSE POST-TEST ANSWER SHEET

Fill in each blank. There are two options to submit the post-test.

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