CHAPTER 1-2: **BIOLOGICAL ORGANIZATION**

1. About ——— % of the atoms in living things are carbon, hydrogen, oxygen, nitrogen, sulfur, and phosphorous.
A 51 **B** 75 **C** 85 **D** 99

2. The human body consists of approximately ——— trillion cells.
A 100 **B** 80 **C** 20 **D** 50

CHAPTER 1-5: **LIPIDS**

3. Phospholipids are basically made up of a ——— molecule with a phosphate group attached to the first carbon at the extreme right.
A glycerol **B** dihydroxyacetone phosphate **C** triosephosphate isomerase **D** glyceraldehyde 3-phosphate

CHAPTER 1-6: **PROTEINS**

4. A protein may contain as few as ——— amino acids, or it may contain thousands.
A 25 **B** 35 **C** 10 **D** 50

5. In the ——— structure, multiple polypeptides are organized together.
A quaternary **B** quadrangle **C** quadplex **D** quadrille

CHAPTER 2-1: **THE ANIMAL CELL**

6. The ——— reticulum (ER) is a system of interconnected membrane channels in the cytosol.
A enteron **B** enterocoele **C** endoplasmic **D** enterotome

CHAPTER 2-3: **THE PLANT CELL**

7. The centers of energy metabolism in the plant cell are the:
A ribosomes **B** mitochondria **C** plastids **D** lysosomes

8. The ——— body is made up of a series of about ten to twenty flattened membranes.
A Gilbert **B** Golgi **C** Golgarian **D** Goletti

CHAPTER 2-6: **ACTIVE TRANSPORT AND ENDOCYTOSIS**

9. Active transport involves special proteins called ——— proteins.
A transference **B** kinetic **C** transport **D** locomotion

10. One type of endocytosis is called ———, in which nutrients are taken into the cell.
A pinocytosis **B** pericytosis **C** nutricytosis **D** vitacytosis

CHAPTER 2-8: **ENERGY FLOW IN LIVING THINGS**

11. Solar energy is trapped in a photosynthesizing organelle of the plant called the:
A mitochondrian **B** adenosine diphosphate **C** ribosome **D** chloroplast

12. Carbohydrates are transported to an organelle called the ———, where they are combined with oxygen molecules during respiration.
A mitochondrian **B** ribosome **C** adenosine diphosphate **D** chloroplast

CHAPTER 2-10: **PHOTOSYNTHESIS – THE LIGHT REACTIONS**

13. The two main processes of photosynthesis involve a series of energy-fixing (light) reactions and ——— - fixing (dark) reactions.
A oxygen **B** carbon **C** zinc **D** heat

CHAPTER 2-13: **THE KREBS CYCLE**

14. An important part of cellular respiration if the Krebs cycle (also called the ——— Cycle).
A Citric Acid **B** Oxalic Acid **C** Acetic Acid **D** Uric Acid

15. For every molecule of acetyl CoA that enters the Krebs cycle, ——— NADH molecules (among other molecule types) are produced.
A four **B** three **C** two **D** five

CHAPTER 2-15: **THE CELL CYCLE**

16. The two major periods of the cell cycle are interphase and the M phase (also known as the phase of ———).
A nuclear fusion **B** mitosis **C** meiosis **D** cell division

17. During the M phase, the second main process is called ——— - in which the cell actually splits.
A metaphase **B** anaphase **C** cytokinesis **D** prophase

CHAPTER 2-17: **MEIOSIS**

18. In metaphase, the homologous chromosomes line up along the ——— of the cell.
A vacuoles **B** Golgi body **C** equator **D** nuclear membrane

19. Meiosis is linked to sexual reproduction in plants and animals because ——— cells join to form a fertilized diploid cell.
A haploid **B** chromatid **C** centriole **D** monoploid

CHAPTER 3-1: **MENDELIAN GENETICS**

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

CHAPTER 3-4: **THE TESTCROSS**

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

CHAPTER 3-6: **MULTIPLE ALLELES**

23. The blood types A, B, AB, and O result from the pairings of ——— different 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

CHAPTER 3-8: **SEX DETERMINATION**

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

CHAPTER 3-10: **CHROMOSOMAL ALTERATIONS**

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

CHAPTER 3-12: **NONDISJUNCTION**

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

CHAPTER 4-1: **STRUCTURE OF DNA**

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

CHAPTER 4-3: **PROKARYOTIC DNA REPLICATION**

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

CHAPTER 4-5: **DNA AND CHROMOSOMES**

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

CHAPTER 4-7: **DNA AND PHENOTYPE**

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

CHAPTER 4-9: **PROTEIN SYTHESIS (TRANSCRIPTION)**

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

CHAPTER 4-11: **GENE REGULATION (LACTOSE)**

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 Francois Jacob and Jacques Monod researched gene regulation in bacteria.
A 1940s **B** 1950s **C** 1910s **D** 1920s

CHAPTER 4-13: **MUTATION AND GENE EXPRESSION**

40. Mutations are unregulated alterations in DNA that *always* affect the phenotype of individuals.
A True **B** False

41. When a strand of DNA is transcribed, a molecule of ——— (mRNA) is formed.
A metalloidal **B** messenger **C** metagenetic **D** metathetic

CHAPTER 4-17: **DNA FINGERPRINTING**

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

CHAPTER 4-19: **ANTISENSE TECHNOLOGY**

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** obsoluten **C** obsomorphic **D** antisense

CHAPTER 5-1: **INTRODUCTION TO EVOLUTION**

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 1802 **B** 1843 **C** 1859 **D** 1872

CHAPTER 5-3: **EVIDENCE FOR EVOLUTION**

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

CHAPTER 5-5: **THE GENE POOL**

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

CHAPTER 5-7: **GENETIC DRIFT**

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

CHAPTER 5-9: **NATURAL SELECTION**

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

CHAPTER 5-11: **SYMPATRIC SPECIATION**

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** Sympatric specionia **D** Sympatric specifomia

CHAPTER 5-14: **EVOLUTION AND THE SHIFTING EARTH**

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

CHAPTER 5-16: **HUMAN EVOLUTION**

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

CHAPTER 6-1: **THE ORIGIN OF ORGANIC MOLECULES**

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

CHAPTER 6-3: **THE FIRST EUKARYOTIC CELLS**

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

CHAPTER 6-7: **VIRUSES**

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 6-9: **PROTOZOA**

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 6-11: **SIMPLE ALGAE**

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

CHAPTER 6-12: **KINGDOM FUNGI**

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

CHAPTER 7-1: **STRUCTURE OF A FLOWERING PLANT**

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 7-3: **LIFE CYCLE 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

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

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

CHAPTER 7-7: **THE ROOT**

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 7-9: **THE LEAF**

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 7-11: **TRANSPORT IN PLANTS**

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

CHAPTER 7-12: **PLANT HORMONES**

77. ——— acid is responsible for the closing of stomata on the undersides of leaves.
A Abscisic **B** Chorismic **C** Isochorismic **D** Salicylic

CHAPTER 8-1: **PHYLUM PORIFERA**

78. Sponges are able to maintain their shape because they posses fibers called:
A striated pores **B** spicules **C** cilia **D** amoebocytes

CHAPTER 8-3: **PHYLUM PLATYHELMINTHES**

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

CHAPTER 8-6: **PHYLUM MOLLUSCA**

81. In mollusks, ——— powerful muscles hold the hinged shells together and open and close them.
A five **B** four **C** sixteen **D** two

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

CHAPTER 8-9: **PHYLUM CHORDATA**

83. 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

84. 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

CHAPTER 9-1: **THE INTEGUMENT (SKIN) AND DERIVATIVES**

85. The ——— is a layer of flat, dead cells that are filled with the protein keratin.
A stratum corneum **B** shaft **C** arrector pili **D** sebaceous gland

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

CHAPTER 9-3: **THE NERVOUS SYSTEM**

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

CHAPTER 9-5: **THE BRAIN**

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

89. The ——— is a mass of fibers that carry signals between the two cerebral hemispheres.
A thalamus **B** corpus callosum **C** pituitary gland **D** pons

CHAPTER 9-7: **THE EAR**

90. In the ear, the ——— is the central chamber that contains fluid-filled sacs that are associated with the sense of equilibrium.
A coiled cochlea **B** tympanic cavity **C** vestibule **D** semicircular canal

CHAPTER 9-8: **MUSCLE TYPES IN THE BODY**

91. ——— muscle makes the voluntary movement of body parts possible.
A Skeletal **B** Smooth **C** Visceral **D** Sarcomere

CHAPTER 9-10: **THE ENDOCRINE SYSTEM**

92. The endocrine glands secrete substances called hormones directly into the fluids of the body.
A True **B** False

93. Lying on top of the kidneys are the adrenal glands – also known as ——— glands.
A supraurea **B** suprarenal **C** suprakidney **D** suprasac

CHAPTER 9-12: **BLOOD CELLS**

94. There are approximately ——— million red blood cells per cubic millimeter in an adult male.
A 3.2 **B** 1.2 **C** 5.4 **D** 12.5

95. 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 9-15: **THE LYMPHATIC SYSTEM**

96. A collection of lymph nodes called ——— patch is located at the surface of the small intestine.
A Pewit's **B** Perry's **C** Plank's **D** Peyer's

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

CHAPTER 9-19: **THE RESPIRATORY SYSTEM**

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 9-21: **THE URINARY 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 10-1: **THE MALE REPRODUCTIVE 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 MEMEBRANES**

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 NICHES**

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** planktolot

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

CHAPTER 11-12: **THE PHOSPHORUS CYCLE**

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

CHAPTER 11-13: **THE GREENHOUSE EFFECT**

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%

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24		48		72		96		120	