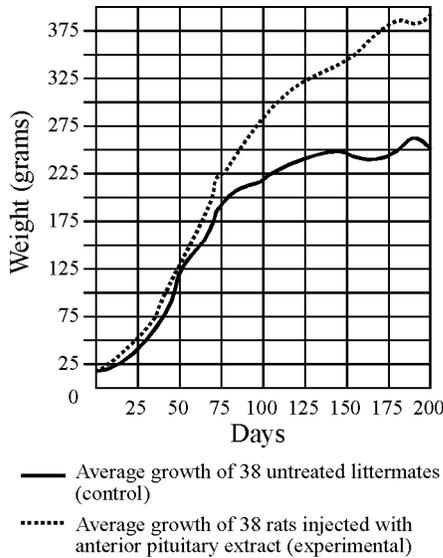


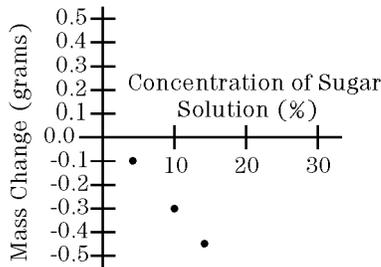
Keystone Review

1. The graph shows the average growth rate for 38 pairs of newborn rats. One of each pair was injected with anterior pituitary extract. The other member of each pair served as a control.



At 75 days, what was the average weight of the rats injected with pituitary extract?

- A. 65 grams B. 125 grams
 C. 200 grams D. 225 grams
2. Four pieces of apple were cut so that all were the same mass and shape. The pieces were placed in four different concentrations of sugar water. After 24 hours, the pieces were removed and their masses determined. The graph shown indicates the change in the mass of each piece.



The four points on the graph represent

- A. assumptions B. data
 C. hypothesis D. conclusions

3. A student reported that a wilted stalk of celery became crisp when placed in a container of ice water. The student's statement was based on

- A. a deduction B. a hypothesis
 C. a conclusion D. an observation

4. An experiment was designed to determine the effect of nitrates on plant growth. Two groups of plants were grown under identical conditions, except one group was watered with a dilute nitrate solution and the other group received water without nitrates. In this investigation, the group of plants grown without added nitrates is known as the

- A. abiotic factor
 B. control
 C. variable
 D. environmental stimulus

5. Which sequence should be followed when conducting a laboratory investigation?

- A. gather experimental data, make observations, form a conclusion, form a hypothesis
 B. define a problem, form a hypothesis gather experimental data, form a conclusion
 C. form a hypothesis, form a conclusion, gather experimental data, define a problem
 D. make observations, gather experimental data, form a conclusion, state a problem

6. An investigation was performed with honeybees to determine the average amount of nectar a bee carried in relation to the distance the flowers were from the hive. The following data were collected: 400 meters, 45 milligrams; 100 meters, 43 milligrams; 600 meters, 44 milligrams; 200 meters, 47 milligrams; 300 meters, 41 milligrams; 500 meters, 42 milligrams.

Which inference is best supported by the data collected?

- A. The distance had no clear effect on the amount of nectar collected.
- B. The farther away the bees had to go the less nectar they carried.
- C. There is a distance beyond which bees lack the energy to carry back a maximum load of nectar.
- D. The flowers near the hive had less nectar.

7. In a scientific investigation, after the question is defined, the next step is most likely

- A. formulating a hypothesis
- B. identifying needed equipment
- C. designing the experiment
- D. collecting the data

8. Which organelle is primarily concerned with the conversion of potential energy of organic compounds into suitable form for immediate use by the cell?

- A. mitochondria
- B. centrosomes
- C. ribosomes
- D. vacuoules

9. Which structure, composed mainly of proteins and lipids, aids in maintaining homeostasis in a cell?

- A. chromosome
- B. centrosome
- C. cell membrane
- D. nucleolus

10. Which process requires the expenditure of cellular energy?

- A. passive transport
- B. active transport
- C. osmosis
- D. diffusion

11. Which molecules must be present in order for energy production to occur in the mitochondria of an animal cell?

- A. chlorophyll molecules
- B. carbon dioxide molecules
- C. lactic acid molecules
- D. oxygen molecules

12. Select the cell compound, *chosen from the list below*, which is best described by the following phrase.

A double-stranded molecule that contains instructions for the manufacture of cell protein.

- A. DNA
- B. Messenger RNA
- C. Transfer RNA
- D. ATP

13. Select the cell compound, *chosen from the list below*, which is best described by the following phrase.

Provides energy for biochemical reactions

- A. DNA
- B. Messenger RNA
- C. Transfer RNA
- D. ATP

14. The building blocks of both DNA and RNA molecules are known as

- A. amino acids
- B. nucleotides
- C. hydrocarbons
- D. polysaccharides

15. The ribosomes is an organelle that functions in the process of

- A. phagocytosis
- B. pinocytosis
- C. protein synthesis
- D. cellular respiration

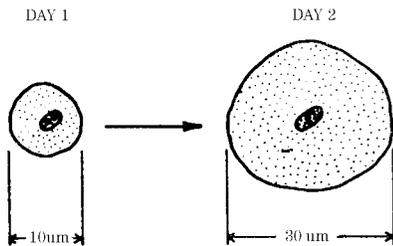
16. Which organelle is present in the cells of a mouse but *not* present in the cells of a bean plant?

- A. cell wall
- B. chloroplast
- C. cell membrane
- D. centriole

17. The process of osmosis is best illustrated by the movement of

- A. water into root hair cells
- B. oxygen into red blood cells
- C. carbon dioxide through stomates
- D. glucose through phloem

18. Which life activity is illustrated by the diagrams of the same cell shown?



- A. reproduction
- B. excretion
- C. transport
- D. growth

19. Which structure includes all of the others?

- A. nucleolus
- B. nucleus
- C. chromosomes
- D. genes

20. A student prepared three different red blood cell suspensions as follows:

Suspension	Contents
A	red blood cells + normal blood serum
B	red blood cells + 10% salt solution
C	red blood cells + distilled water

Which suspension, when viewed under the microscope, would contain red blood cells that appear wrinkled and reduced in volume?

- A. A
- B. B
- C. C

21. Which suspension represents the control in this investigation?

- A. A
- B. B
- C. C

22. The change of cell volume is principally due to the loss or gain of

- A. serum
- B. water
- C. hemoglobin
- D. salt

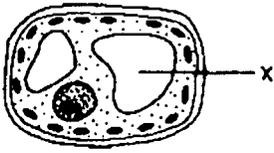
23. In a cell, the selective permeability of the cell membrane is most closely associated with the maintenance of

- A. homeostasis
- B. hydrolysis
- C. phagocytosis
- D. pinocytosis

24. Which structures are found in every living cell?

- A. a plasma membrane and cytoplasm
- B. chloroplasts and mitochondria
- C. a cell wall and nucleus
- D. centrioles and chromosomes

25. In the diagram of a cell shown, the structure labeled X enables the cell to



- A. release energy
 B. store waste products
 C. control nuclear division
 D. manufacture proteins
26. Since cyanide is a poison that limits a cell's ability to manufacture ATP, a cell containing cyanide is *least* likely to carry on the process of

- A. passive transport B. osmosis
 C. active transport D. diffusion

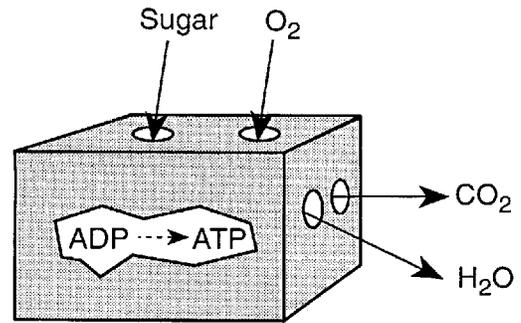
27. Which cell organelles are most closely associated with protein synthesis?

- A. chloroplasts B. mitochondria
 C. ribosomes D. lysosomes

28. A white blood cell ingests, then digests, a number of bacteria. Which cell organelles were directly responsible for the digestion of the bacteria?

- A. centrioles B. lysosomes
 C. ribosomes D. mitochondria

29. The diagram shown represents some events that take place in a plant cell. In which organelle would these events most likely occur?



- A. mitochondrion B. chloroplast
 C. lysosome D. centriole

30. A student using a compound light microscope to observe a cell saw a number of threadlike nuclear structures such as those shown in the photograph. These threadlike structures are composed primarily of



- A. fatty acids B. glucose
 C. nucleic acids D. lipids

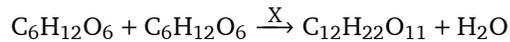
31. Which substances are most commonly used as building blocks in the synthesis of some lipids?

- A. sugars and starches
 B. amino acids and nucleotides
 C. starches and enzymes
 D. glycerol and fatty acids

32. Which element is present in living cells and in *all* organic compounds?

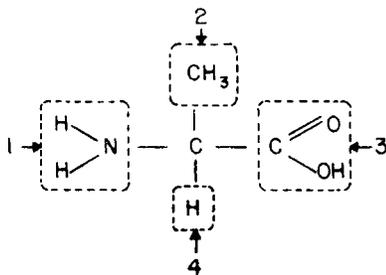
- A. potassium
- B. sulfur
- C. nitrogen
- D. carbon

33. The process represented by the equation is known as



- A. fermentation
- B. hydrolysis
- C. aerobic oxidation
- D. dehydration synthesis

34. Which group of atoms varies from one type of amino acid to another?



- A. 1
- B. 2
- C. 3
- D. 4

35. Which term best describes a solution with a pH of 5?

- A. acidic
- B. neutral
- C. basic
- D. colorless

36. Which elements are present in all organic compounds?

- A. hydrogen and oxygen
- B. nitrogen and oxygen
- C. nitrogen and carbon
- D. hydrogen and carbon

37. Water makes up from 50 percent to 90 percent of a living organism. Most of the rest of the mass consists of a variety of carbon-containing compounds. A valid conclusion that can be drawn from these statements is that living things are composed of

- A. organic matter, only
- B. inorganic matter, only
- C. both organic and inorganic matter
- D. neither organic nor inorganic matter

38. Which substances synthesized by the body enable humans to go for a long period of time without eating?

- A. proteins and mucus
- B. enzymes and hormones
- C. vitamins and lipids
- D. fats and glycogen

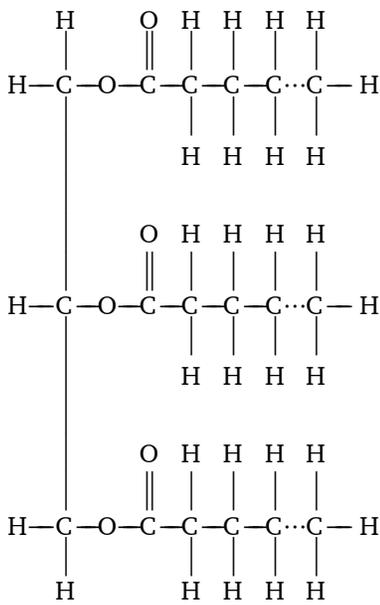
39. This consists of chains of nucleotides.

- A. DNA molecules, only
- B. RNA molecules, only
- C. Both DNA and RNA molecules
- D. Neither DNA nor RNA molecules

40. Which pH indicates a substance that is more acidic than a substance with a pH of 4?

- A. 6
- B. 2
- C. 7
- D. 12

41. Which statement best describes this molecule?



- A. It has the ability to control heredity.
- B. It has the ability to control reactions.
- C. It has a high energy content.
- D. It is involved in photosynthesis.

42.

Class of Compound	Characteristic
A	Has glycerol as a building block
B	Contains both acid groups and amino acids
C	Formed from subunits containing a nitrogenous base, a phosphate, and ribose
D	Includes sugars and starches

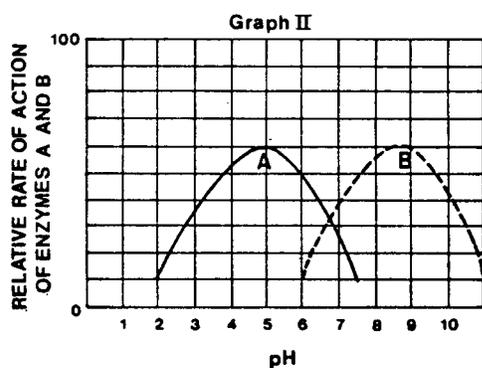
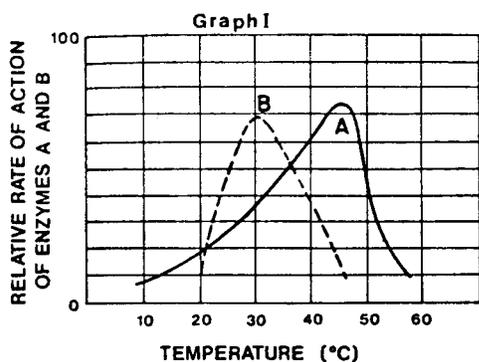
What is another characteristics of the compounds in class D?

- A. They are composed of basic subunits known as nucleotides.
- B. They contain the atoms carbon, hydrogen, and oxygen, with the hydrogen and oxygen in a 2:1 ratio.
- C. They transfer amino acids to ribosomes during protein synthesis.
- D. They include chemical compounds such as insulin and hemoglobin.

43. Which is a characteristic of an enzyme?

- A. It is an inorganic catalyst.
- B. It is destroyed after each chemical reaction.
- C. It provides energy for any chemical reaction.
- D. It regulates the rate of a specific chemical reaction.

44. Graph I shows the relationship between the relative rates of activity of enzymes A and B and temperature. Graph II shows the relationship between the relative rates of activity of enzymes A and B and pH.



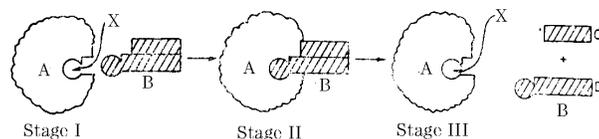
Under which conditions is enzyme A most effective?

- A. at 40°C and a pH of 5
- B. at 45°C and a pH of 5
- C. at 45°C and a pH of 9
- D. at 50°C and a pH of 9

45. The distortion (change in shape) of enzyme molecules which occurs at high temperatures is known as

- A. synthesis
- B. specificity
- C. replication
- D. denaturation

46. Which letter indicates a substrate molecule in this reaction?

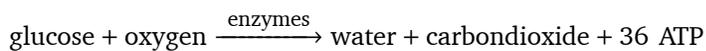


- A. A
- B. B
- C. C
- D. D

47. Organisms release stored chemical energy from nutrients by the process of

- A. assimilation
- B. transportation
- C. respiration
- D. ingestion

48. This equation represents a process that occurs in both plants and animals.



Within which organelles are most of the 36 ATP molecules produced?

- A. ribosomes
- B. endoplasmic reticula
- C. nuclei
- D. mitochondria

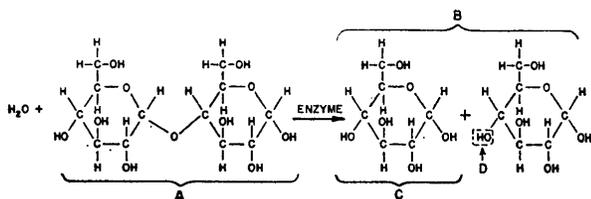
49. Which process requires the presence of oxygen to release energy?

- A. aerobic respiration
- B. photosynthesis
- C. fermentation
- D. anaerobic respiration

50. Aerobic respiration is a life function that occurs in

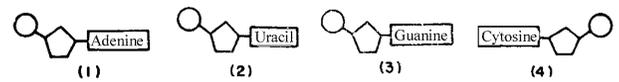
- A. animal cells, only
- B. green plant cells, only
- C. nongreen plant cells, only
- D. most animal and plant cells

51. Which chemical reaction is represented by this equation?



- A. dehydration synthesis
- B. carbon fixation
- C. hydrolysis
- D. fermentation

52. Which pair of nucleotides can be held together by weak hydrogen bonds?

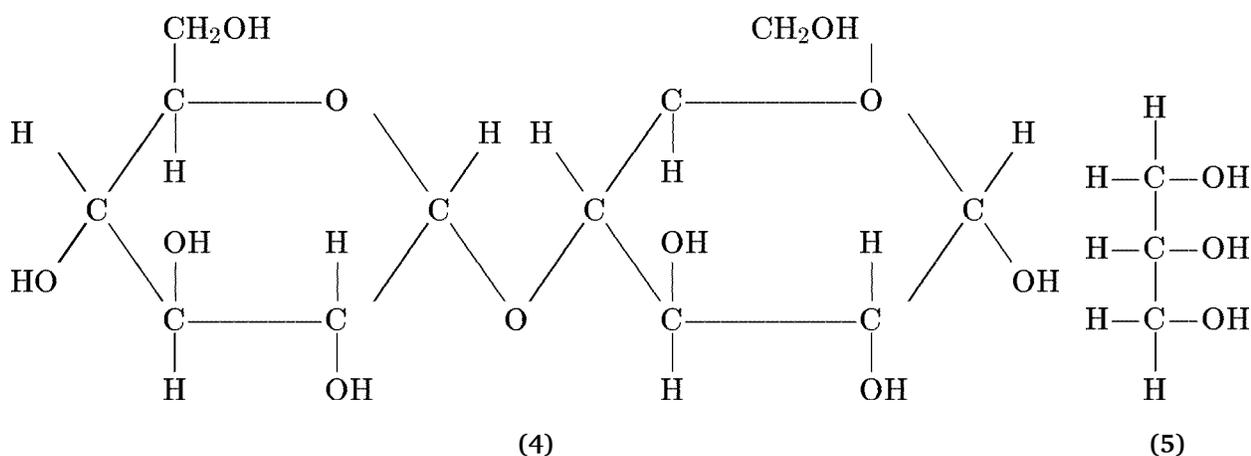
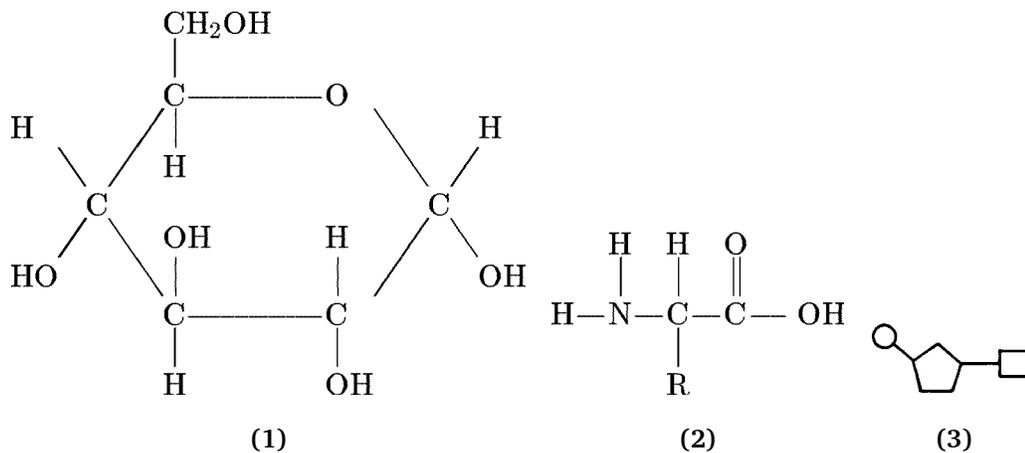


- A. 1 and 3
- B. 2 and 3
- C. 3 and 4
- D. 4 and 2

53. The complete hydrolysis of a protein would result in the formation of

- A. fatty acids
- B. glycerol
- C. amino acids
- D. polysaccharides

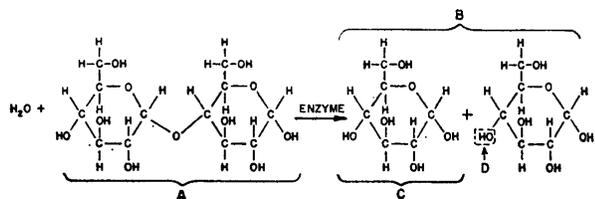
54. The structural formulas shown represent certain organic compounds found in living cells.



A strand of RNA is a polymer made up of many repeating units of the compound represented by

- A. 1 B. 5 C. 3 D. 4

55. Which letter indicates a molecule of disaccharide?



- A. A B. B C. C D. D

56. Organic compounds in which molecules are made up of building blocks containing amino groups are classified as

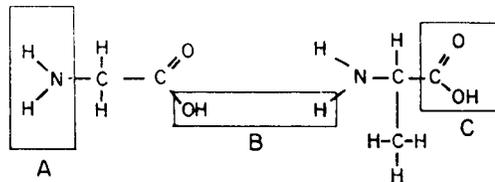
- A. proteins B. carbohydrates
C. lipids D. fatty acids

57. Select the compound, *chosen from the list below*, which is most closely associated with this statement:

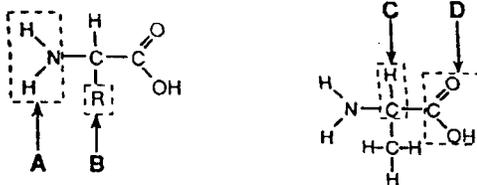
Some of these molecules are made from three fatty acids bonded to a molecule of glycerol.

- A. Carbohydrates B. Lipids
 C. Vitamins D. Water
58. Which types of compounds are *not* classified as carbohydrates?
- A. lipids B. sugars
 C. starches D. polysaccharides
59. Which compound contains only the elements carbon, hydrogen, and oxygen?
- A. insulin B. glucose
 C. hemoglobin D. adenine

60. The structural formulas represent molecules of



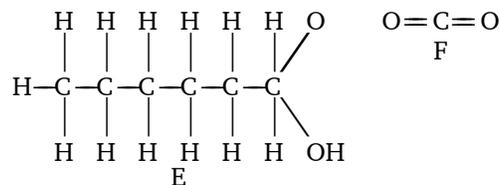
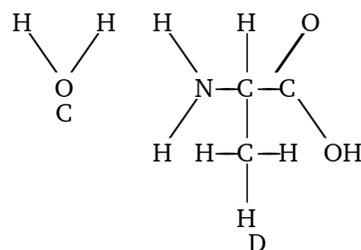
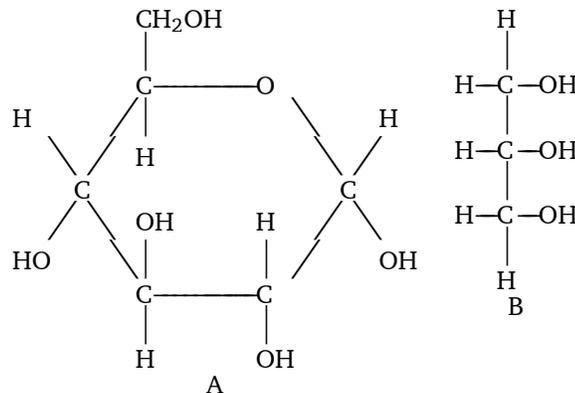
- A. fatty acids B. amino acids
 C. polypeptides D. monosaccharides
61. Which organic molecule is correctly paired with an end product of its digestion?
- A. nucleic acid – glycerol
 B. carbohydrate – fatty acid
 C. protein – amino acid
 D. lipid – nucleotide
62. Which letter indicates a chemical group that can vary to form a variety of these molecules?



- A. A B. B C. D D. D

63. Which molecule is the primary energy source of animals?

- A. A B. F C. C D. D



64. Which types of molecules are used for the synthesis of a lipid?

- A. Amino acid and Fatty acid
 B. Fatty acid and Glycerol
 C. Amino acid and Monosaccharide
 D. Monosaccharide and Glycerol

65. In living organisms, lipids function mainly as

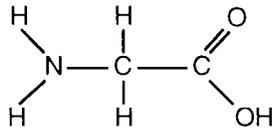
- A. sources of stored energy and transmitters of genetic information
 B. sources of stored energy and components of cellular membranes
 C. transmitters of genetic information and catalysts of chemical reactions
 D. catalysts of chemical reactions and components of cellular membranes

66. An element found in all proteins but *not* found in carbohydrates and lipids is

- A. carbon B. hydrogen
 C. oxygen D. nitrogen

Class of Compound	Characteristic
A	Has glycerol as a building block
B	Contains both acid groups and amino acids
C	Formed from subunits containing a nitrogenous base, a phosphate, and ribose
D	Includes sugars and starches

Which class of compounds includes the compound represented in the diagram?

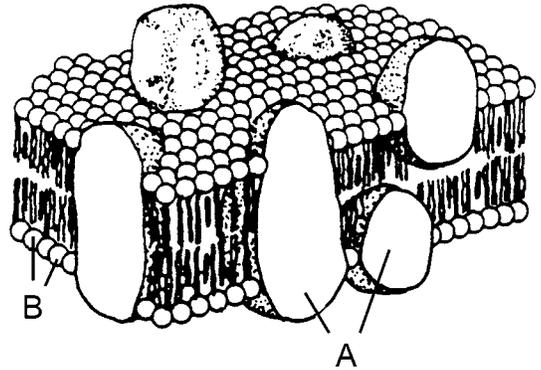


- A. A B. B C. C D. D

68. Hemoglobin, insulin, albumin, and maltase, which are composed of chains of amino acids, are examples of

- A. protein B. carbohydrates
C. lipids D. nucleic acids

69. In the accompanying diagram of the plasma membrane shown, which structures are indicated by letters A and B?



- A. A—proteins; B—lipids
B. A—fats; B—carbohydrates
C. A—cellulose; B—fats
D. A—water; B—proteins

70. The term that represents all the chemical activities that occur in an organism is

- A. synthesis B. regulation
C. metabolism D. homeostasis

71. In humans, *most* enzyme-controlled reactions have their greatest reaction rates at a pH value closest to

- A. 1 B. 7 C. 12 D. 14

72. Which term refers to the maintenance of a stable internal environment in an organism?

- A. respiration B. regulation
C. metabolism D. homeostasis

73. When a person's level of physical activity changes, the circulatory system supplies body cells with amounts of nutrients and oxygen that are appropriate to sustain the new level of activity. This statement best illustrates the concept of

- A. homeostasis
- B. pinocytosis
- C. synthesis
- D. cyclosis

74. Which activity would *not* be carried out by an organism in order to maintain a stable internal environment?

- A. removal of metabolic waste products
- B. transport of organic and inorganic compounds
- C. production of offspring by the organism
- D. regulation of physiological processes

75. Which statement best describes an activity that will contribute to the maintenance of homeostasis in an organism?

- A. A shark swims toward a highly polluted region of the ocean.
- B. A desert rattlesnake enters an underground burrow on a hot summer day.
- C. Roots of a willow tree grow away from a moisture-rich region of the soil.
- D. A polar bear sheds most of its fur during the coldest months of the winter.

76. A strand of DNA consists of thousands of smaller, repeating units known as

- A. lipids
- B. amino acids
- C. nucleotides
- D. polysaccharides

77. Which nitrogenous base is normally present in DNA but absent from RNA?

- A. adenine
- B. cytosine
- C. thymine
- D. guanine

78. Which two bases are present in equal amounts in a double-stranded DNA molecule?

- A. cytosine and thymine
- B. adenine and thymine
- C. adenine and uracil
- D. cytosine and uracil

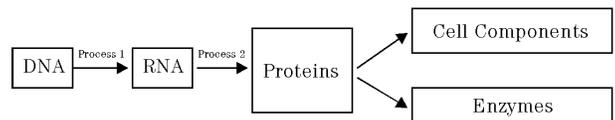
79. All nucleotides of DNA and RNA contain a

- A. uracil base
- B. thymine base
- C. ribose sugar
- D. phosphate group

80. The DNA code for a particular amino acid contains a sequence of how many nucleotides?

- A. 5
- B. 6
- C. 3
- D. 4

81. Within which organelle does process 1 occur?



- A. ribosome
- B. nucleus
- C. centriole
- D. lysosome

82. Within a living cell, which organelles are necessary for process 2 to occur?

- A. centrioles
- B. lysosomes
- C. Golgi bodies
- D. ribosomes

83. Mendel's discovery that characteristics are inherited due to the transmission of hereditary factors resulted from his

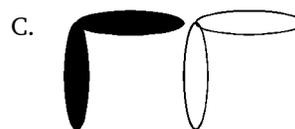
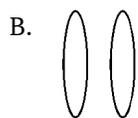
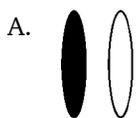
- A. careful microscopic examinations of genes and chromosomes
- B. dissections to determine how fertilization occurs in pea plants
- C. breeding experiments with many generations of fruit flies
- D. analysis of the offspring produced from many pea plant crosses

84. CHROMOSOME THAT CARRIES THE DOMINANT ALLELE FOR HEIGHT	
CHROMOSOME THAT CARRIES THE RECESSIVE ALLELE FOR HEIGHT	
CHROMOSOME THAT CARRIES THE DOMINANT ALLELE FOR SEED SHAPE	
CHROMOSOME THAT CARRIES THE RECESSIVE ALLELE FOR SEED SHAPE	

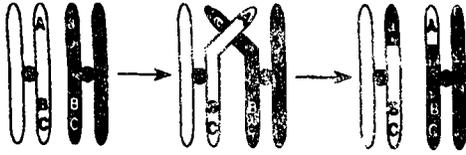
Which statement correctly describes the location of the alleles for height and seed shape?

- A. The dominant alleles for height and seed shape are located on the same chromosome.
- B. The dominant and recessive alleles are located on the same member of a homologous pair of chromosomes.
- C. The alleles for height are located on a different homologous pair of chromosomes than the alleles for seed shape.
- D. The dominant alleles are located on one pair of homologous chromosomes and the recessive alleles are located on another pair of homologous chromosomes.

85. Which diagram represents those chromosomes that are responsible for the heterozygous genotype for height?



86. Which process is illustrated in the diagram?



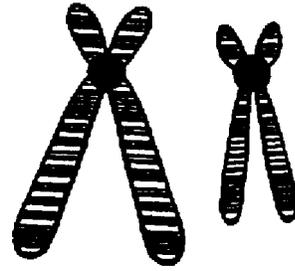
- A. segregation
- B. replication
- C. crossing-over
- D. nondisjunction

87. Traits that are controlled by genes found on an X-chromosome are said to be

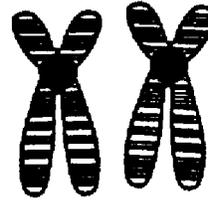
- A. autosomal dominant
- B. autosomal recessive
- C. codominant
- D. sex-linked

88. Which diagram represents a pair of homologous chromosomes?

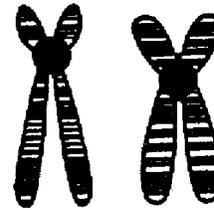
A.



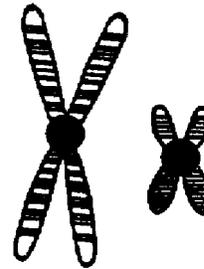
B.



C.



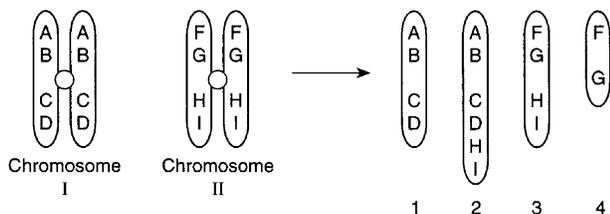
D.



89. A change in genetic material that produces a variation in a species may be a result of

- A. a mutation
- B. competition
- C. overproduction of a species
- D. a struggle for survival

90. The accompanying diagram shows some chromosomal alterations



Which chromosome represents an alteration known as a deletion?

- A. 1 B. 2 C. 3 D. 4
91. Which mutation could be passed on to future generations?
- A. a gene change in a liver cell
- B. cancer caused by excessive exposure of skin cells to the Sun
- C. a chromosomal alteration during gametogenesis
- D. random breakage of a chromatid in a leaf cell of a maple tree
92. Which cross could produce a child with blood type A?
- A. $I^A i \times ii$ B. $I^A I^A \times I^B I^B$
- C. $I^A i \times I^B I^B$ D. $I^B I^B \times ii$
93. If a portion of a messenger RNA molecule contains the base sequence A–A–U, the corresponding transfer RNA base sequence is
- A. A–A–U B. G–G–T
- C. T–T–C D. U–U–A

94. Which pair of structures are homologous?

- A. wing of an insect and wing of a bird
- B. tentacle of a hydra and flipper of a whale
- C. front leg of an insect and bones in the leg of a human
- D. bones in the front leg of a dog and bones in the wing of a bat

95. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

In cats, gene *E* produces yellow fur and gene *B* produces black fur. A cat that inherits both of these genes has patches of yellow and black fur and is known as a calico. The alleles for black or yellow are located on the X-chromosome. The cross $X^B Y \times X^B X^E$ is illustrated in the square below.

	X^B	Y
X^B	①	②
X^E	③	④

Yellow male offspring are represented by

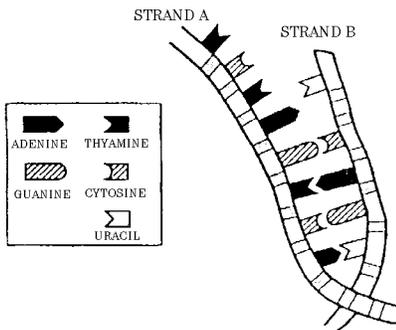
- A. 1 B. 2 C. 3 D. 4
96. What is the result of normal chromosome replication?
- A. Lost or worn out chromosomes are replaced.
- B. Each daughter cell is provided with twice as many chromosomes as the parent cell.
- C. The exact number of centrioles is provided for spindle fiber attachment.
- D. Two identical sets of chromosomes are produced.

97. In organisms that reproduce only asexually, genetic variation among offspring results from
- mutations
 - fusion of gametes
 - meiosis
 - vegetative propagation

98. Select the type of nucleic acid, *chosen from the list below*, that is best described by the statement shown.

Carries information from the nucleus of a cell to its cytoplasm

- Deoxyribonucleic acid
 - Messenger ribonucleic acid
 - Ribosomal ribonucleic acid
 - Transfer ribonucleic acid
99. If strand A represents a portion of a DNA molecule, its complementary sequence of nitrogenous bases on messenger RNA would normally be



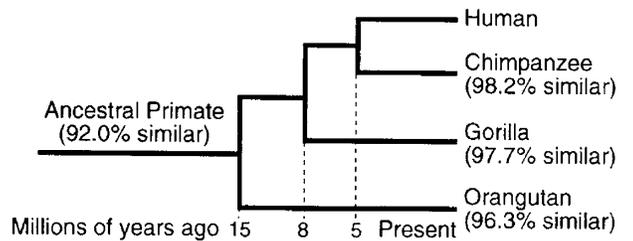
- A-G-A-T-C-A-G-T
- T-C-T-A-G-T-C-T
- A-G-A-U-C-A-G-U
- U-G-U-A-G-U-C-U

100. Overexposure of animals to X rays is dangerous because X rays are known to damage DNA. A direct result of this damage is cells with
- unusually thick cell walls
 - no organelles in the cytoplasm
 - abnormally large chloroplasts
 - changes in chromosome number or structure

101. Which illustration of a chromosomal change best represents a chromosome mutation known as a deletion?

- ABCDEFGHI → ABCDEF
- ABCDEFGHI → ABCDEFGH
- ABCDEFGHI → ABCDEFG
- ABCDEFGHI → ABCDEFGKMN

102. The diagram shows a comparison of nitrogen base sequences in the DNA of some organisms to those of a human.



According to this diagram, humans may be most closely related to the

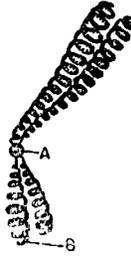
- ancestral primate
- chimpanzee
- gorilla
- orangutan

103. The diploid chromosome number in a certain species of fish is 20. How many chromosomes would normally be found in bone cell of this fish?

- 10
- 20
- 23
- 40

104. The diagram shown represents a microscopic structure observed during the process of cell division. Letter A indicates a

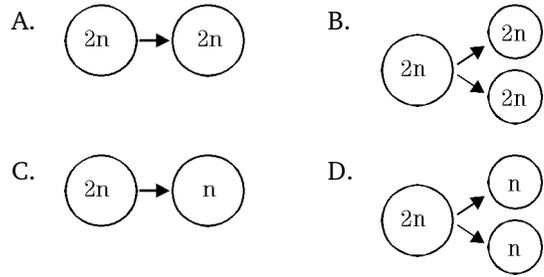
- A. nucleolus B. ribosome
- C. centriole D. centromere



105. One difference between mitotic cell division in animals and in plants is that in plants

- A. chromosomes are duplicated, whereas in animals chromosomes are not duplicated
- B. chromosomes are separated, whereas in animals chromosomes are not separated
- C. spindle fibers are formed, whereas in animals spindle fibers are not formed
- D. cell plates are formed, whereas in animals cell plates are not formed

106. Which diagram most correctly represents the process of mitosis?

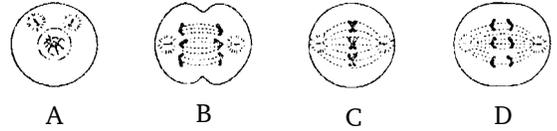


107. All types of asexual reproduction involve the process known as

- A. mitosis B. fertilization
- C. artificial pollination D. reduction division

108. Which is the correct sequence for the stages of mitotic cell division represented by the diagrams shown?

- A. A → B → C → D B. A → C → D → B
 C. B → A → D → C D. B → C → D → A



109. Which is a true statement about normal mitotic cell division?

- A. Each daughter cell produced has only one-fourth the number of chromosomes of the parent cell.
 B. Each daughter cell produced has only one-half the number of chromosomes of the parent cell.
 C. Each daughter cell produced has the same number of chromosomes as the parent cell.
 D. Each daughter cell produced has twice the number of chromosomes of the parent cell.

110. In a certain species of meadowmouse, dark coat color is dominant over cream coat color. If heterozygous dark-coated male mice are mated with cream-coated female mice, what would be the expected percentage of phenotypes in their offspring?

- A. 25% dark coated, 75% cream coated
 B. 50% dark coated, 50% cream coated
 C. 75% dark coated, 25% cream coated
 D. 100% dark coated

111. In a species of corn, the diploid number of chromosomes is 20. What is the number of chromosomes found in each of the normal egg cells produced by this species?

- A. 5 B. 10 C. 20 D. 40

112. In cabbage butterflies, white color (W) is dominant and yellow color (w) is recessive. If a pure white cabbage butterfly mates with a yellow cabbage butterfly, all the resulting (F_1) butterflies are heterozygous white. Which cross represents the genotypes of the parent generation?

- A. $Ww \times ww$ B. $WW \times Ww$
 C. $WW \times ww$ D. $WW \times WW$

113. The chances of a YY chromosome combination occurring in humans as a result of normal meiotic division and normal gametic fusion is

- A. 0% B. 25% C. 50% D. 100%

114. The egg cells of a species are most similar to the sperm cells of that species in their

- A. degree of motility
 B. amount of stored food
 C. chromosome number
 D. shape and size

115. A woman with blood genotype $I^A i$ marries a man with blood genotype $I^B i$. What is the probability that they will have a child with type O blood?

- A. 1/1 B. 1/2 C. 1/3 D. 1/4

116. Which sequence represents the process of meiosis?

- A. $n \rightarrow n$ B. $2n \rightarrow n$
 C. $n \rightarrow 2n$ D. $2n \rightarrow 2n$

117. The failure of homologous chromosomes to separate from each other is known as

- A. crossing-over
- B. disjunction
- C. nondisjunction
- D. synapsis

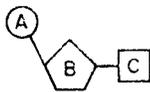
118. Synapsis, crossing-over, and disjunction are events that take place during the process of

- A. mitosis
- B. meiosis
- C. internal fertilization
- D. binary fission

119. The horse, *Equus caballus*, has 64 chromosomes in its body cells. The donkeys, *Equus asinus*, has 62. How many chromosomes would most likely be found in the body cells of a hybrid mule resulting from a mating of these two animals?

- A. 126
- B. 95
- C. 63
- D. 32

120. Which is the correct identification of the parts of the DNA nucleotide in the diagram shown?



- A. A=uracil, B=deoxyribose, C=thymine
- B. A=phosphate, B=ribose, C=uracil
- C. A=thymine, B=ribose, C=uracil
- D. A=phosphate, B=deoxyribose, C=thymine

121. What will happen if a base sequence of a strand of DNA is changed from A-T-G to A-T-C?

- A. The m-RNA will be changed from U-A-C to U-A-G.
- B. The t-RNA will be changed from U-A-C to T-A-C.
- C. The m-RNA will be changed from T-U-C to T-U-G.
- D. The t-RNA will be changed from C-A-U to C-A-C.

122. Which statement best describes messenger RNA?

- A. It transfers polypeptides to the nucleus.
- B. It is chemically more complex than DNA.
- C. It has one oxygen atom less than DNA.
- D. It is composed of a single strand of nucleotides.

123. The correct order of molecules involved in protein synthesis is

- A. messenger RNA, transfer RNA, DNA, polypeptide
- B. DNA, messenger RNA, polypeptide, transfer RNA
- C. transfer RNA, polypeptide, DNA, messenger RNA, DNA
- D. DNA, messenger RNA, transfer RNA, polypeptide

124. Today some plants are cloned to produce millions of offspring from a small piece of the original plant. Plant cloning is possible because the plant's diploid cells have the same genetic potential as the zygote that originally produced the plant and because of the action of the plant hormones auxin and cytokinin. These hormones are combined with other organic and inorganic substances in a growth medium that stimulates the production of new plants. The cloning process occurs in a sterile environment. The new plants produced are genetically identical to the original plant and to each other.

The process and equipment for cloning are more expensive than for other forms of vegetative propagation. The advantage of cloning is that large numbers of desirable plants are produced in a short period of time. For example, a million plants of a new variety can be cloned in about six months.

For which reason is cloning used to reproduce plants?

- A. Plants with a large degree of genetic variability are produced.
- B. Plants are produced more cheaply than by other vegetative methods.
- C. Plants are produced by the sexual process, resulting in seeds.
- D. A large number of plants are produced in a short period of time.

125. Which process could be used by breeders to develop tomatoes with a longer shelf life and to develop cows with increased milk production?

- A. natural selection B. sporulation
- C. genetic engineering D. chromatography

Keystone Review 12/15/2014

- | | | | |
|---------|---|---------|---|
| 1. | | 21. | |
| Answer: | D | Answer: | A |
| 2. | | 22. | |
| Answer: | B | Answer: | B |
| 3. | | 23. | |
| Answer: | D | Answer: | A |
| 4. | | 24. | |
| Answer: | B | Answer: | A |
| 5. | | 25. | |
| Answer: | B | Answer: | B |
| 6. | | 26. | |
| Answer: | A | Answer: | C |
| 7. | | 27. | |
| Answer: | A | Answer: | C |
| 8. | | 28. | |
| Answer: | A | Answer: | B |
| 9. | | 29. | |
| Answer: | C | Answer: | A |
| 10. | | 30. | |
| Answer: | B | Answer: | C |
| 11. | | 31. | |
| Answer: | D | Answer: | D |
| 12. | | 32. | |
| Answer: | A | Answer: | D |
| 13. | | 33. | |
| Answer: | D | Answer: | D |
| 14. | | 34. | |
| Answer: | B | Answer: | B |
| 15. | | 35. | |
| Answer: | C | Answer: | A |
| 16. | | 36. | |
| Answer: | D | Answer: | D |
| 17. | | 37. | |
| Answer: | A | Answer: | C |
| 18. | | 38. | |
| Answer: | D | Answer: | D |
| 19. | | 39. | |
| Answer: | B | Answer: | C |
| 20. | | 40. | |
| Answer: | B | Answer: | B |

41.
Answer: C

42.
Answer: B

43.
Answer: D

44.
Answer: B

45.
Answer: D

46.
Answer: B

47.
Answer: C

48.
Answer: D

49.
Answer: A

50.
Answer: D

51.
Answer: C

52.
Answer: C

53.
Answer: C

54.
Answer: C

55.
Answer: A

56.
Answer: A

57.
Answer: B

58.
Answer: A

59.
Answer: B

60.
Answer: B

61.
Answer: C

62.
Answer: B

63.
Answer: A

64.
Answer: B

65.
Answer: B

66.
Answer: D

67.
Answer: B

68.
Answer: A

69.
Answer: A

70.
Answer: C

71.
Answer: B

72.
Answer: D

73.
Answer: A

74.
Answer: C

75.
Answer: B

76.
Answer: C

77.
Answer: C

78.
Answer: B

79.
Answer: D

80.
Answer: C

81.
Answer: B

82.
Answer: D

83.
Answer: D

84.
Answer: C

85.
Answer: A

86.
Answer: C

87.
Answer: D

88.
Answer: B

89.
Answer: A

90.
Answer: D

91.
Answer: C

92.
Answer: A

93.
Answer: D

94.
Answer: D

95.
Answer: D

96.
Answer: D

97.
Answer: A

98.
Answer: B

99.
Answer: C

100.
Answer: D

101.
Answer: A

102.
Answer: B

103.
Answer: B

104.
Answer: D

105.
Answer: D

106.
Answer: B

107.
Answer: A

108.
Answer: B

109.
Answer: C

110.
Answer: B

111.
Answer: B

112.
Answer: C

113.
Answer: A

114.
Answer: C

115.
Answer: D

116.
Answer: B

117.
Answer: C

118.
Answer: B

119.
Answer: C

120.
Answer: D

121.
Answer: A

122.
Answer: D

123.
Answer: D

124.
Answer: D

125.
Answer: C