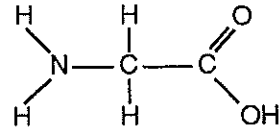

1. Base your answer to the following question on the information in the chart below and on your knowledge of biology.

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



What is another characteristic of the compounds in class *D*?

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

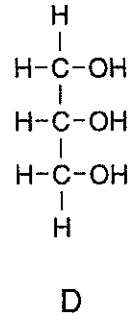
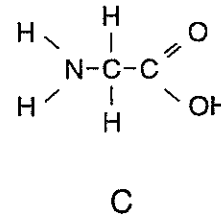
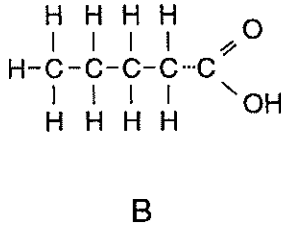
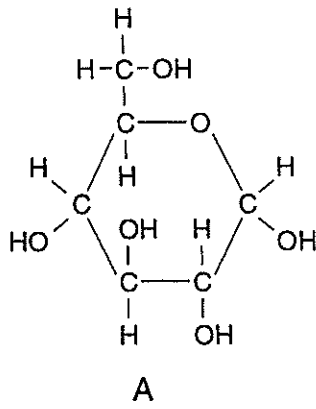
2. Some weed killers, insecticides, and food additives alter the DNA of certain cells. Because of this effect, these substances are known as

- 1) auxins
- 2) mutagens
- 3) meristems
- 4) autosomes

3. Which substances are produced by the hydrolysis of an oil?

- 1) water and nucleic acids
 - 2) amino acids and dipeptides
 - 3) fatty acids and glycerol
 - 4) glucose and water
-

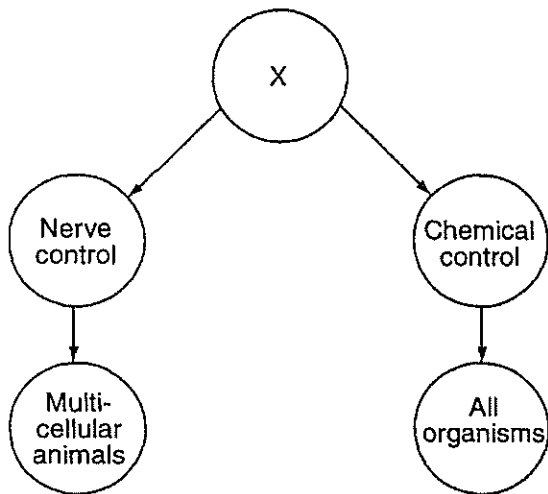
4. The diagrams below represent four different molecules.



Which two diagrams represent the building blocks of lipids?

- 1) *A and B*
- 2) *B and D*
- 3) *C and D*
- 4) *A and C*

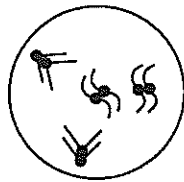
5. A graphic organizer is represented in the diagram below.



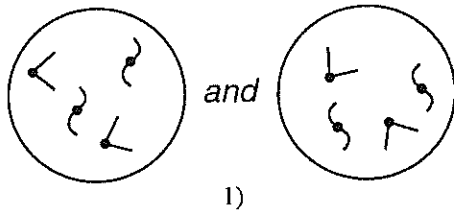
The letter *X* most likely represents the term

- 1) regulation
- 2) excretion
- 3) growth
- 4) transpiration

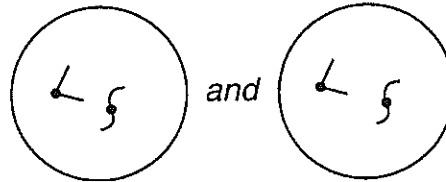
6. The chromosome content of a skin cell that is about to form two new skin cells is represented in the diagram below.



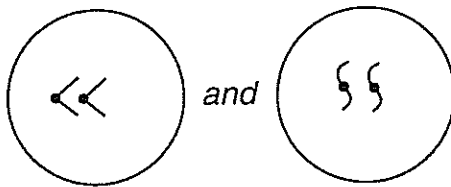
Which diagram best represents the chromosomes that would be found in the two new skin cells produced as a result of this process?



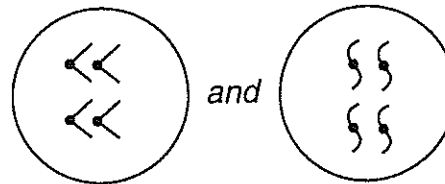
1)



3)



2)



4)

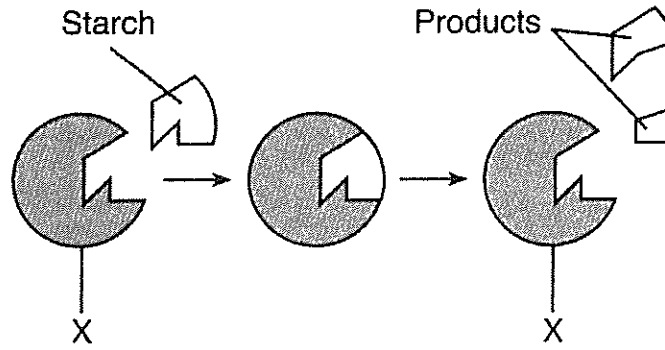
7. One difference between prokaryotic and eukaryotic cells is that only eukaryotic cells contain

- 1) a cell membrane
- 2) a cell wall
- 3) membrane-bound organelles
- 4) ribosomes

8. Two proteins in the same cell perform different functions. This is because the two proteins are composed of

- 1) chains folded the same way and the same sequence of simple sugars
- 2) chains folded the same way and the same sequence of amino acids
- 3) chains folded differently and a different sequence of simple sugars
- 4) chains folded differently and a different sequence of amino acids

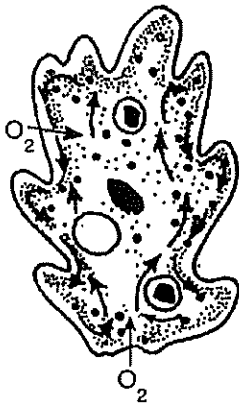
9. Base your answer to the following question on the diagram below, which represents stages in the digestion of a starch, and on your knowledge of biology.



The products would most likely contain

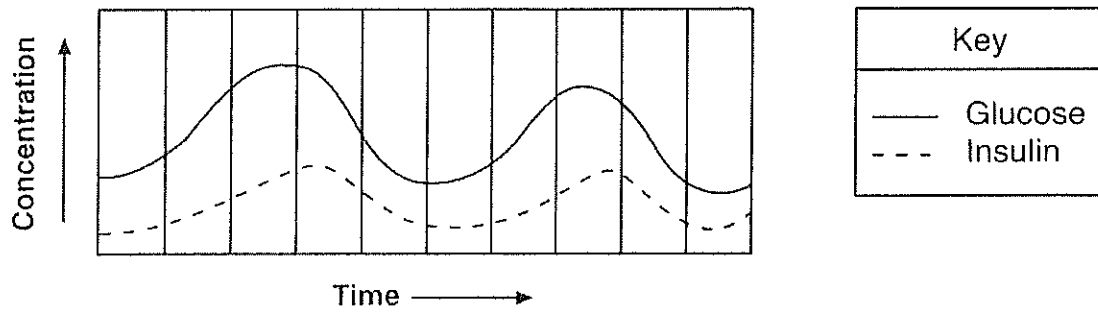
- 1) simple sugars
- 2) fats
- 3) amino acids
- 4) minerals

10. Which life process is indicated by the arrows in the diagram of an amoeba shown below?



- 1) digestion
- 2) excretion
- 3) ingestion
- 4) transport

11. The graph below shows the levels of glucose and insulin in the blood of a human over a period of time.



This graph represents

- 1) an allergic reaction
- 2) an antigen-antibody reaction
- 3) maintenance of homeostasis
- 4) autotrophic nutrition

12. An iodine test of a tomato plant leaf revealed that starch was present at 5:00 p.m. on a sunny afternoon in July. When a similar leaf from the same tomato plant was tested with iodine at 6:00 a.m. the next morning, the test indicated that less starch was present. This reduction in starch content most likely occurred because starch was

- 1) changed directly into proteins
- 2) transported out of the leaves through the guard cells
- 3) transported downward toward the roots through tubes
- 4) changed into simple sugars

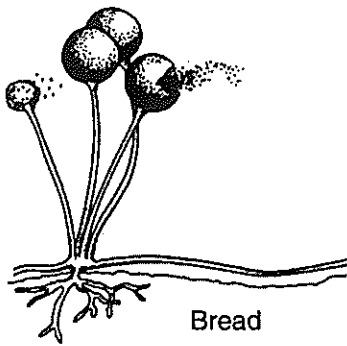
13. The presence of a cancerous mass in the lung is a direct result of

- 1) prolonged exposure to very dry air
- 2) eating cookies for breakfast
- 3) a total elimination of normal cells
- 4) the uncontrolled division and growth of abnormal cells

14. Enzyme molecules normally interact with substrate molecules. Some medicines work by blocking enzyme activity in pathogens. These medicines are effective because they

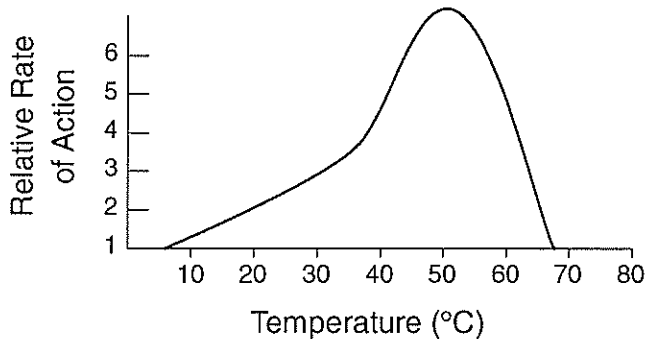
- 1) are the same size as the enzyme
- 2) are the same size as the substrate molecules
- 3) have a shape that fits into the enzyme
- 4) have a shape that fits into all cell receptors

15. Which method of reproduction is shown in the diagram below?



- 1) stem cutting
- 2) budding
- 3) tuber formation
- 4) sporulation

16. The graph below shows the effect of temperature on the relative rate of action of enzyme *X* on a protein.



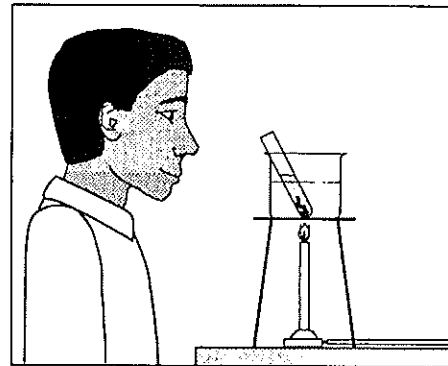
Which change would *not* affect the relative rate of action of enzyme *X*?

- 1) the addition of cold water when the reaction is at 50°C
- 2) an increase in temperature from 70°C to 80°C
- 3) the removal of the protein when the reaction is at 30°C
- 4) a decrease in temperature from 40°C to 10°C

17. The breathing rate, heart rate, and blood hormone levels of a human would most likely provide information about human

- 1) cellular organization
- 2) inheritance
- 3) nutrition
- 4) metabolism

18. Base your answer on the diagram below and on your knowledge of biology.



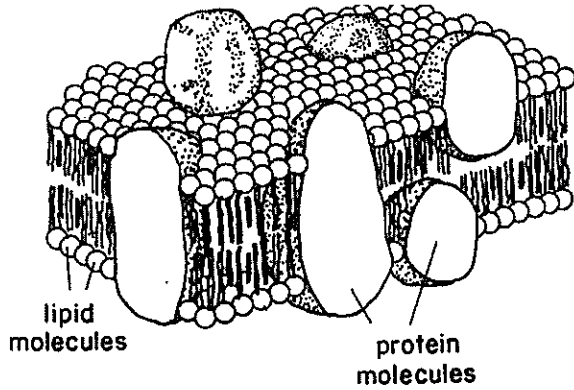
Which statement describes *two* unsafe laboratory practices represented in the diagram?

- 1) The flame is too high and the test tube is unstoppered.
- 2) The opening of the test tube is pointed toward the student and the student is not wearing goggles.
- 3) The test tube is unstoppered and the student is not wearing goggles.
- 4) The beaker has water in it and the flame is under the tripod.

19. A structure involved in storing and packaging cell proteins is the

- 1) ribosome
- 2) centriole
- 3) Golgi complex (bodies)
- 4) cell membrane

20. Which cellular organelle is represented by diagram below?

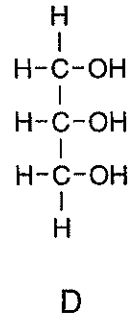
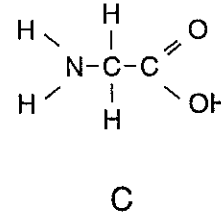
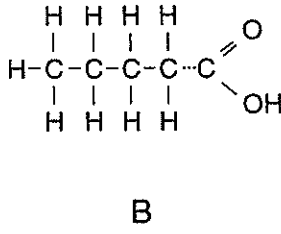
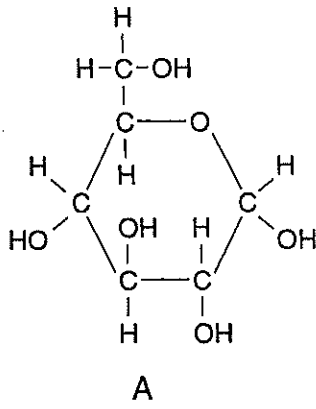


- 1) protein
 - 2) molecules
 - 3) plasma membrane
 - 4) cell wall
21. The phrases below describe several events that occur during the process of mitosis.
- (A) attachment of double-stranded chromosomes to the spindle apparatus
 - (B) formation of single-stranded chromosomes, which are moved to opposite ends of the cell
 - (C) disintegration of the nuclear membrane
 - (D) nuclear membrane formation around each set of chromosomes, forming two nuclei
 - (E) synthesis of a spindle apparatus

Which sequence represents the correct order of these events?

- 1) $A \rightarrow B \rightarrow C \rightarrow D \rightarrow E$
- 2) $B \rightarrow D \rightarrow A \rightarrow C \rightarrow E$
- 3) $A \rightarrow D \rightarrow E \rightarrow B \rightarrow C$
- 4) $C \rightarrow E \rightarrow A \rightarrow B \rightarrow D$

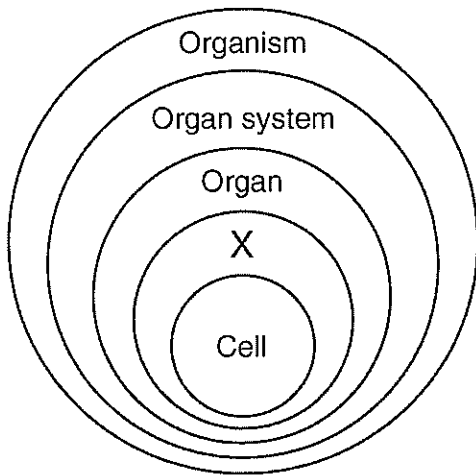
22. The diagrams below represent four different molecules.



Which diagram represents a building block of proteins?

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

23. The diagram below represents levels of organization in living things.



Which term would best represent X?

- 1) human
- 2) tissue
- 3) stomach
- 4) organelle

24. Photosynthesis in plants takes place in organelles known as

- 1) chloroplasts
- 2) stomates
- 3) ribosomes
- 4) mitochondria

25. An enzyme that works best in an acidic environment would function best at a pH of

- 1) 11
- 2) 9
- 3) 3
- 4) 7

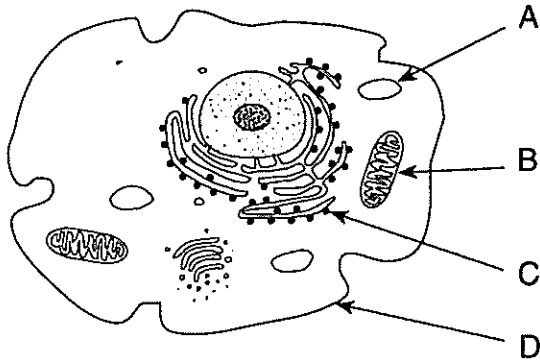
26. Which organelle stores water in plants and controls the amount of water in paramecium?

- 1) cell walls
- 2) centrioles
- 3) mitochondria
- 4) vacoules

27. Which formula represents an organic compound?

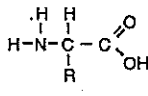
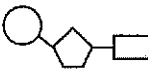
- 1) $Mg(OH)_2$
- 2) $NaCl$
- 3) $C_{12}H_{22}O_{11}$
- 4) NH_3

28. Which letter in the diagram below indicates an organelle that controls the production of proteins?



- 1) *A*
 - 2) *B*
 - 3) *C*
 - 4) *D*
-

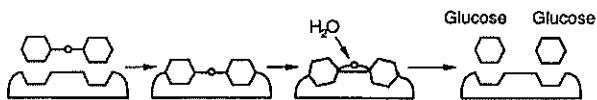
29. Base your answer to the following question on the chart below and on your knowledge of biology.

Class of Substance	Basic Unit of Structure	One Possible Function	Examples
A		B	C
Carbohydrate	D	Structural component of cell walls	E
F	G	Structural component of cell membranes	Fats, waxes
H		Protein synthesis	I

In which section of the chart do the substances starch and glycogen belong?

- 1) A
- 2) E
- 3) C
- 4) I

30. Base your answer to the following question on Which chemical reaction is represented by the diagram below?



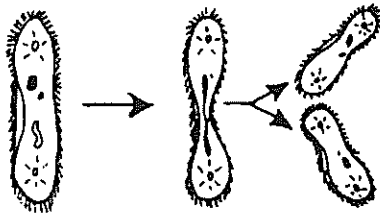
- 1) dehydration synthesis of a dipeptide
- 2) hydrolysis of a polypeptide
- 3) dehydration synthesis of a lipid
- 4) hydrolysis of a disaccharide

31. Base your answer to the following question on

Which process is a form of autotrophic nutrition?

- 1) transport
- 2) regulation
- 3) fermentation
- 4) photosynthesis

32. Which process is illustrated in the diagram below?



- 1) binary fission
- 2) sexual reproduction
- 3) reduction division
- 4) nuclear fusion

33. As a result of their metabolic activities, many organisms produce harmful substances. These substances are eliminated by the process of

- 1) ingestion
- 2) secretion
- 3) pinocytosis
- 4) excretion

34. A cell in the stem tip of a corn plant contains 20 chromosomes. After this cell divides, how many chromosomes should each resulting daughter cell contain?

- 1) 10
- 2) 20
- 3) 30
- 4) 40

35. Every single-celled organism is able to survive because it carries out

- 1) metabolic activities
- 2) autotrophic nutrition
- 3) heterotrophic nutrition
- 4) sexual reproduction

36. Which row in the chart below contains correct information concerning synthesis?

Row	Building Blocks	Substance Synthesized Using the Building Blocks
(1)	glucose molecules	DNA
(2)	simple sugars	protein
(3)	amino acids	enzyme
(4)	molecular bases	starch

- 1) 1
- 2) 2
- 3) 3
- 4) 4

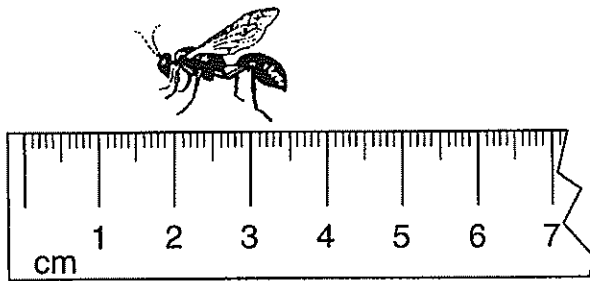
37. Nutrition involves those activities by which organisms

- 1) remove cellular waste products
- 2) obtain and process materials needed for other activities
- 3) exchange gases with their environment
- 4) absorb and circulate materials

38. Which life activity is *not* required for the survival of an individual organism

- 1) nutrition
- 2) respiration
- 3) reproduction
- 4) synthesis

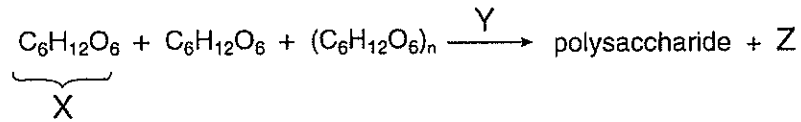
39. The diagram below shows a wasp positioned next to a centimeter ruler.



What is the approximate length of a wing of this wasp?

- 1) 1.0 mm
 - 2) 1.4 cm
 - 3) 3.5 cm
 - 4) 35 mm
40. Which process includes the other three?
- 1) synthesis
 - 2) metabolism
 - 3) excretion
 - 4) nutrition
41. Which group contains only molecules that are each assembled from smaller organic compounds?
- 1) proteins, water, DNA, fats
 - 2) proteins, starch, carbon dioxide, water
 - 3) proteins, DNA, fats, starch
 - 4) proteins, carbon dioxide, DNA, starch
42. Which substance is an inorganic compound?
- 1) water
 - 2) glucose
 - 3) maltase
 - 4) insulin

43. Base your answer to the following question on the chemical reaction represented below and on your knowledge of biology.



What is the name of the process represented by arrow Y?

- 1) hydrolysis
- 2) excretion
- 3) respiration
- 4) dehydration synthesis

44. DNA replication is required just prior to which of the following processes?

- 1) mitosis
- 2) cyclosis
- 3) pinocytosis
- 4) protein synthesis

45. Transport of molecules within animal cells is assisted by a system of internal membranes that make up the

- 1) endoplasmic reticulum
- 2) mitochondria
- 3) ribosomes
- 4) chloroplast

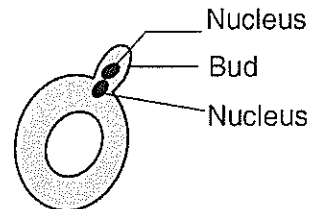
46. A tree produces only seedless oranges. A small branch cut from this tree produces roots after it is planted in soil. When mature, this new tree will most likely produce

- 1) oranges with seeds, only
- 2) oranges without seeds, only
- 3) a majority of oranges with seeds and only a few oranges without seeds
- 4) oranges and other kinds of fruit

47. In which process are simple materials chemically combined to form more complex materials?

- 1) synthesis
- 2) pinocytosis
- 3) hydrolysis
- 4) cyclosis

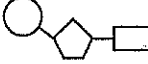
48. The diagram below represents a yeast cell that is in the process of budding, a form of asexual reproduction.



Which statement describes the outcome of this process?

- 1) The bud will develop into a zygote.
- 2) The two cells that result will each contain half the species number of chromosomes.
- 3) The two cells that result will have identical DNA.
- 4) The bud will start to divide by the process of meiotic cell division.

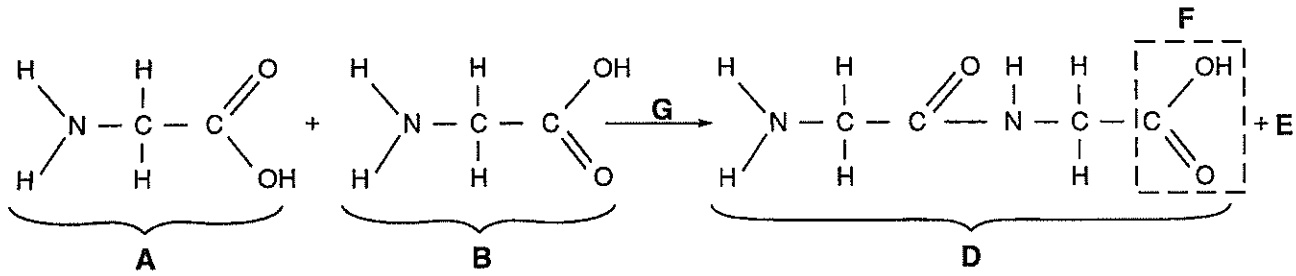
49. on the chart below and your knowledge of Biology

Class of Substance	Basic Unit of Structure	One Possible Function	Examples
A	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{N}-\text{C}-\text{C} \\ \quad \quad \\ \text{R} \quad \text{O} \\ \quad \quad \text{OH} \end{array} $	B	C
Carbohydrate	D	Structural component of cell walls	E
F	G	Structural component of cell membranes	Fats, waxes
H		Protein synthesis	I

Which belongs in section G ?

- 1) amino acids
- 2) fatty acids
- 3) glucose
- 4) water

Base your answers to questions 50 and 51 on the chemical reaction represented below.



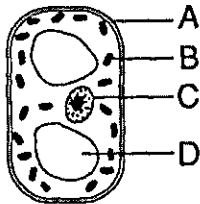
50. Amino acids are indicated by letters

- 1) *A* and *B*
- 2) *A* and *G*
- 3) *G* and *D*
- 4) *B* and *D*

51. The portion of the molecule in box *F* is known as

- 1) an amino group
- 2) a carboxyl group
- 3) a polymer
- 4) a monosaccharide

52. The diagram below represents a plant cell.



Which cell structure is made of cellulose?

- 1) *A*
- 2) *B*
- 3) *C*
- 4) *D*

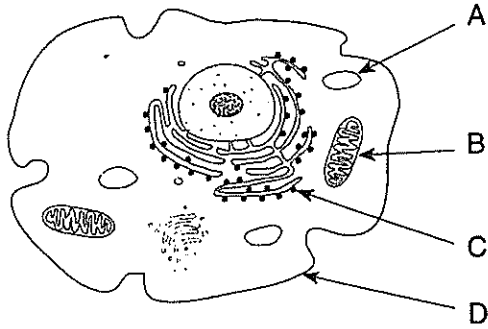
53. Which organism is considered an exception to the cell theory because it has a noncellular structure?

- 1) tree
- 2) bacterium
- 3) virus
- 4) fish

54. Asexual reproduction of diploid organisms normally results in new organisms that contain cells with

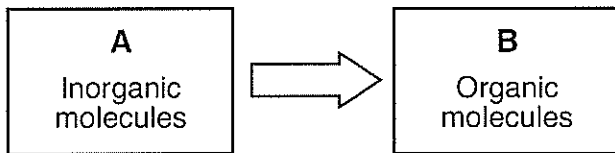
- 1) more chromosomes than are found in the cells of the parent
- 2) the *n* number of chromosomes
- 3) the *2n* number of chromosomes
- 4) fewer chromosomes than are found in the cells of the parent

55. Which letter in the diagram below indicates the structure that is most closely associated with excretion?



- 1) *A*
- 2) *B*
- 3) *C*
- 4) *D*

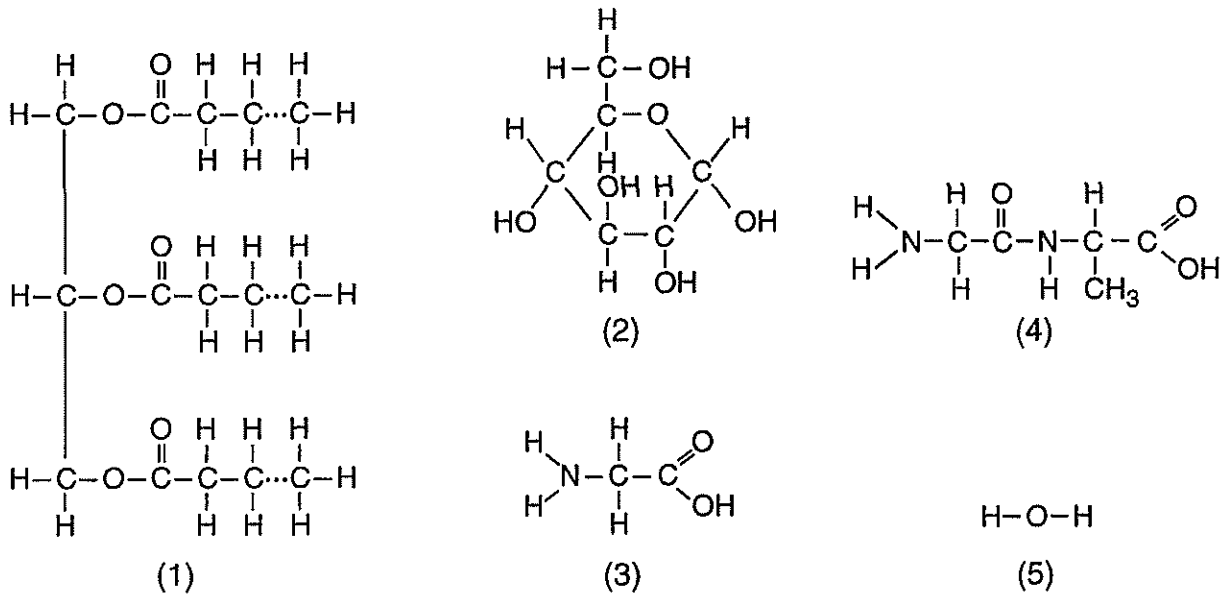
56. The diagram below represents a biological process



Which set of molecules is best represented by letters *A* and *B*?

- 1) A: oxygen and water
B: glucose
- 2) A: glucose
B: carbon dioxide and water
- 3) A: carbon dioxide and water
B: glucose
- 4) A: glucose
B: oxygen and water

Base your answers to questions 57 and 58 on the diagram below. For each of the following phrases, select the molecule, chosen from those shown below, which is best described by that phrase.



57. A molecule that results from all dehydration synthesis reactions

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5

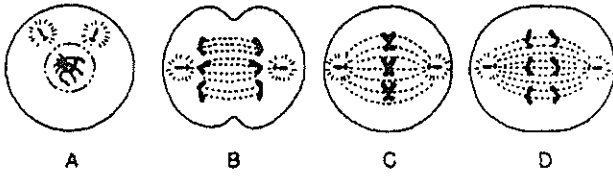
58. An example of a carbohydrate

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5

59. Excretion is best described as the removal of

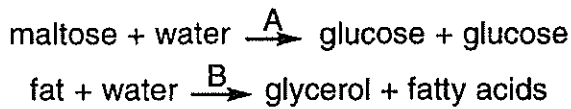
- 1) metabolic wastes from a cell
- 2) toxic wastes by the process of cytolysis
- 3) water molecules from dipeptide hydrolysis
- 4) undigested material from the digestive tract

60. Base your answer to the following question on Which is the correct sequence for the stages of mitotic cell division represented by the diagrams below?



- 1) $A \rightarrow B \rightarrow C \rightarrow D$
- 2) $A \rightarrow C \rightarrow D \rightarrow B$
- 3) $B \rightarrow A \rightarrow D \rightarrow C$
- 4) $B \rightarrow C \rightarrow D \rightarrow A$

61. Two chemical equations are shown below.



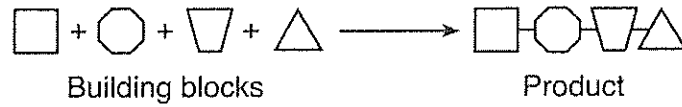
What do letters *A* and *B* represent?

- 1) *A* – lipase; *B* – protease
- 2) *A* – protease; *B* – maltase
- 3) *A* – maltase; *B* – lipase
- 4) *A* – maltase; *B* – protease

62. The cell theory states that

- 1) all cells have nuclei that contain genetic information
- 2) living organisms are composed of cells that arise from preexisting cells
- 3) all cells regenerate and contain the same basic structures
- 4) organisms that lack certain organelles reproduce by binary fission

63. The diagram below represents the synthesis of a portion of a complex molecule in an organism.

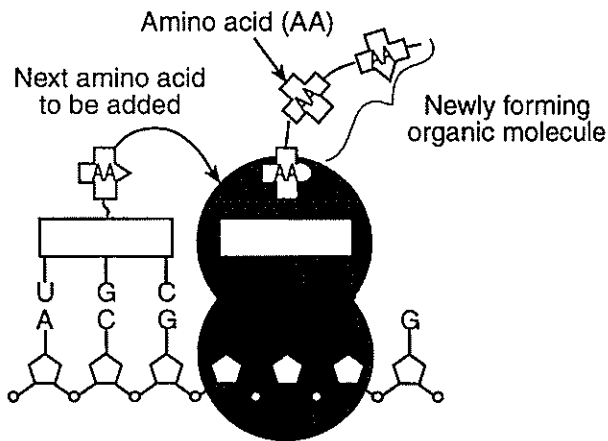


Which row in the chart could be used to identify the building blocks and product in the diagram?

Row	Building Blocks	Product
(1)	starch molecules	glucose
(2)	amino acid molecules	part of protein
(3)	sugar molecules	ATP
(4)	DNA molecules	part of starch

- 1) 1
- 2) 2
- 3) 3
- 4) 4

64. The diagram below represents a process that occurs within a cell in the human pancreas.



This process is known as

- 1) digestion by enzymes
- 2) protein synthesis
- 3) energy production
- 4) replication of DNA

65. Which term is defined as all the chemical reactions that are required to sustain life?

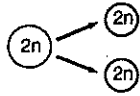
- 1) metabolism
- 2) nutrition
- 3) regulation
- 4) synthesis

66. Which statement best explains why invertebrates regenerate lost tissue more readily than most vertebrates do?

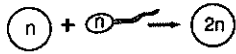
- 1) Invertebrates contain specialized cells that produce the hormones necessary for this process.
- 2) Invertebrate cells exhibit a higher degree of uncontrolled cell division than vertebrate cells do.
- 3) Invertebrate animals' cells cannot undergo mitosis.
- 4) Invertebrate animals have more undifferentiated cells than vertebrate animals have.

67. Which diagram best represents mitotic cell division?

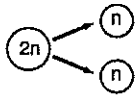
1)



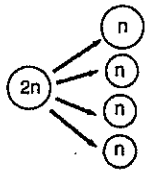
2)



3)



4)



68. Which statement best describes enzymes?

- 1) They slow down the rate of breathing.
- 2) They are the building blocks of polymers.
- 3) They are the building blocks of lipids.
- 4) They influence the rate of chemical reactions.

69. The function of a cell depends primarily on its

- 1) life span
- 2) color
- 3) structure
- 4) movement

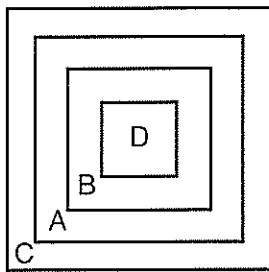
70. When heating a solution in a test tube, a student should

- 1) point the test tube in any direction
 - 2) hold the test tube with two fingers
 - 3) cork the test tube
 - 4) wear goggles
-

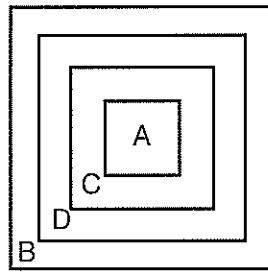
71. Which diagram represents the relative sizes of the structures listed below?

Structures

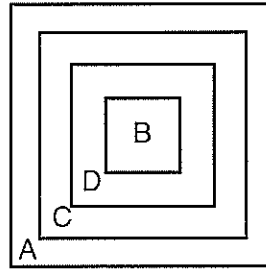
A	gene
B	cell
C	chromosome
D	nucleus



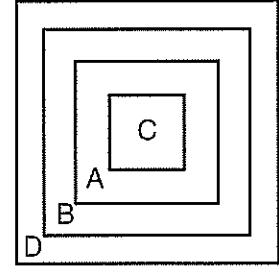
1)



2)

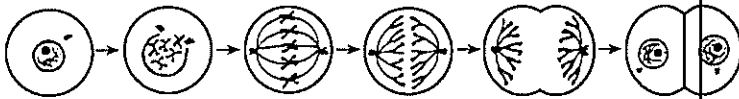


3)



4)

72. Which activity most directly involves the process represented in the diagram below?



- 1) an amoeba ingesting and digesting paramecia
- 2) a white blood cell engulfing bacteria
- 3) an RNA molecule replicating itself
- 4) an animal repairing damaged tissue

73. In all organisms, the coded instructions for specifying the characteristics of the organism are directly determined by the arrangement of the

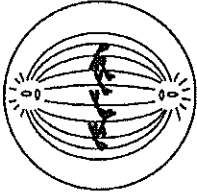
- 1) twenty kinds of amino acids in each protein
- 2) twenty-three pairs of genes on each chromosome
- 3) stands of simple sugars in certain carbohydrate molecules
- 4) four types of molecular bases in the genes

74. A human liver cell and a human skin cell in the same person have the same genetic sequences. However, these cells are different because the liver cell

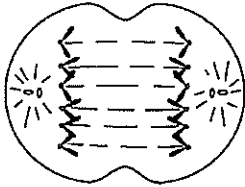
- 1) has more dominant traits than the skin cell
- 2) can reproduce but the skin cell cannot
- 3) carries out respiration but the skin cell does not
- 4) uses different genes than the skin cell

75. Which diagram below represents a plant cell close to the final stage of mitotic cell division?

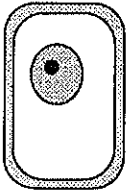
1)



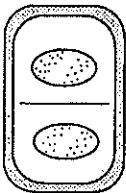
2)



3)



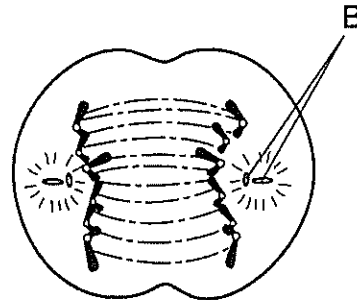
4)



76. An intestinal cell that secretes (produces) an enzyme would most likely contain many

- 1) ribosomes
- 2) centrioles
- 3) chloroplasts
- 4) nuclei

77. Base your answer to the following question on The cell in the diagram below illustrates a stage of mitotic cell division.



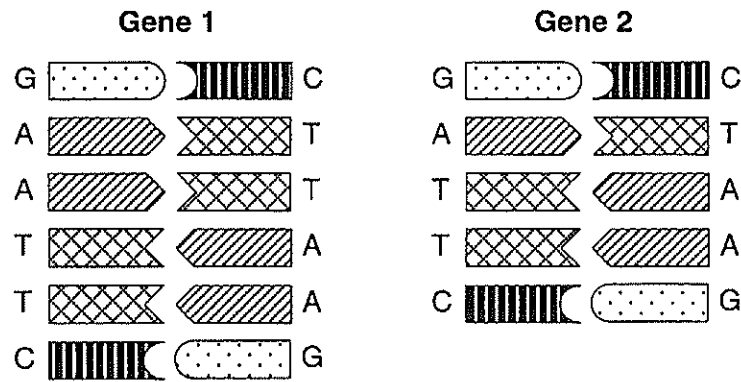
Letter *B* indicates the

- 1) paired chromosomes
- 2) centrioles
- 3) cell plate
- 4) endoplasmic reticulum

78. A single gene mutation results from

- 1) a change in a base sequence in DNA
- 2) recombination of traits
- 3) the failure of chromosomes to separate
- 4) blocked nerve messages

79. The diagrams below represent portions of the genes that code for wing structure in two organisms of the same species. Gene 1 was taken from the cells of a female with normal wings, and gene 2 was taken from the cells of a female with abnormal wings.

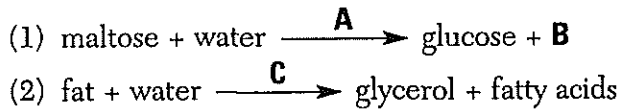


The abnormal wing structure was most likely due to

- 1) an addition mutation
- 2) a substitution mutation
- 3) a deletion mutation
- 4) normal replication

80. Base your answer to the following question on the two chemical reactions shown below.

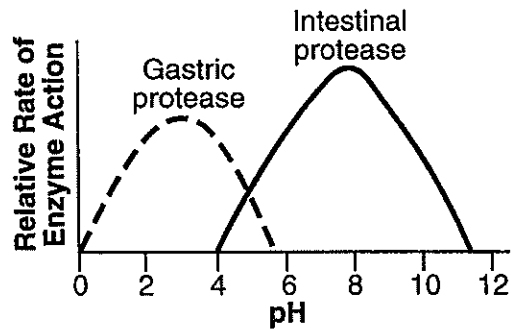
Chemical Reactions



Substance C is most likely

- 1) lipase
- 2) sucrase
- 3) maltase
- 4) amylase

81. Base your answer to the following question on the graph below and on your knowledge of biology.



What is the optimum (best) pH for the action of intestinal protease?

- 1) 5
- 2) 8
- 3) 10
- 4) 12

82. The life function responsible for the coordination and control of all life activities in an organism is known as

- 1) regulation
- 2) reproduction
- 3) excretion
- 4) nutrition

83. Microscopic examination of an animal cell reveals the presence of a plasma membrane but no cell wall. Which additional structures would normally be present within this cell?

- 1) starch grains
- 2) centrioles
- 3) chloroplasts
- 4) large vacuoles

84. One *disadvantage* of a genetic mutation in a human skin cell is that it

- 1) may result in the production of a defective protein
- 2) may alter the sequence of simple sugars in insulin molecules
- 3) can lead to a lower mutation rate in the off-spring of the human
- 4) can alter the rate of all the metabolic processes in the human

85. The ability of the human body to keep blood-sugar levels within a fairly narrow range, despite the intake of meals high in carbohydrates, is an example of

- 1) active transport
 - 2) genetic recombination
 - 3) homeostasis
 - 4) digestion
-

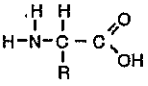
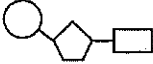
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86. Arrows *A*, *B*, and *C* in the diagram below represent the processes necessary to make the energy stored in food available for muscle activity.



The correct sequence of processes represented by *A*, *B*, and *C* is

- 1) diffusion \rightarrow synthesis \rightarrow active transport
 - 2) digestion \rightarrow diffusion \rightarrow cellular respiration
 - 3) digestion \rightarrow excretion \rightarrow cellular respiration
 - 4) synthesis \rightarrow active transport \rightarrow excretion
-
87. A transparent metric ruler is placed on the stage of a microscope and observed under low power. The diameter of the field of vision was found to be 2 millimeters. How many micrometers is the diameter?
- 1) 10
 - 2) 200
 - 3) 1,000
 - 4) 2,000
88. A certain enzyme will hydrolyze egg white but not starch. Which statement best explains this observation?
- 1) Enzymes are specific in their actions.
 - 2) Starch molecules are too large to be hydrolyzed.
 - 3) Starch is composed of amino acids.
 - 4) Egg white acts as a coenzyme for hydrolysis.
89. Organisms undergo constant changes as they maintain an internal balance known as
- 1) interdependence
 - 2) homeostasis
 - 3) synthesis
 - 4) recombination
-

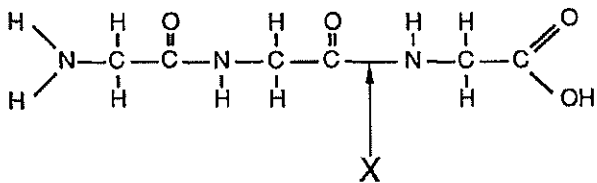
90. on the chart below and your knowledge of Biology

Class of Substance	Basic Unit of Structure	One Possible Function	Examples
A		B	C
Carbohydrate	D	Structural component of cell walls	E
F	G	Structural component of cell membranes	Fats, waxes
H		Protein synthesis	I

In which section of the chart do Proteins belong?

- 1) F
- 2) B
- 3) A
- 4) D

91. The structural formula of a molecule is shown below.



The part of the molecule indicated by X is known as a

- 1) carboxyl group
- 2) hydrogen bond
- 3) peptide bond
- 4) variable side group

92. The chart below indicates the elements contained in four different molecules and the number of atoms of each element in those molecules.

Element	Number of Atoms			
	Molecule A	Molecule B	Molecule C	Molecule D
Hydrogen	12	0	3	0
Carbon	6	1	0	1
Nitrogen	0	0	1	0
Oxygen	6	2	0	3
Calcium	0	0	0	1

Which molecule can be classified as organic?

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

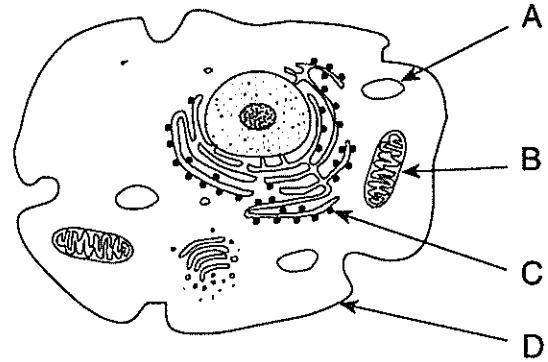
93. Which statement best describes cellular respiration?

- 1) It occurs in animal cells but not in plant cells.
- 2) It converts energy in food into a more usable form.
- 3) It uses carbon dioxide and produces oxygen.
- 4) It stores energy in food molecules.

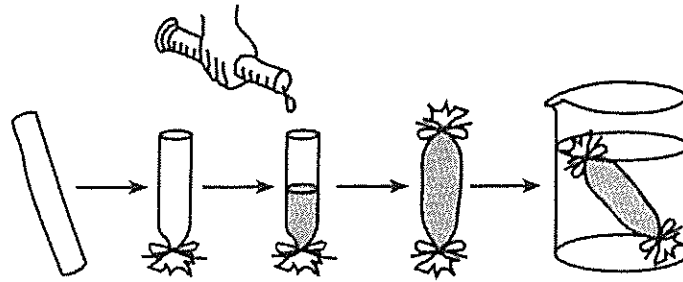
94. If a human system fails to function properly, what is the most likely result?

- 1) a stable rate of metabolism
- 2) a disturbance in homeostasis
- 3) a change in the method of cellular respiration
- 4) a change in the function of DNA

95. Which letter in the diagram below indicates an organelle that is involved in excretion and explain how.



96. A solution containing both starch and glucose was placed inside the model cell represented below. The model cell was then placed in a beaker containing distilled water.



Identify *one* specific substance that should have been added to the distilled water so that observations regarding movement of starch could be made.

97. Many plants can affect the growth of other plants near them. This can occur when one plant produces a chemical that affects another plant.

Design an experiment to determine if a solution containing ground-up goldenrod plants has an effect on the growth of radish seedlings. In your experimental design be sure to:

- state a hypothesis to be tested
- describe how the experimental group will be treated differently from the control group
- explain why the number of seedlings used for the experiment should be large
- identify the type of data that will be collected
- describe experimental results that would support your hypothesis