

TEST 19

REAL TEST 19

Questions 1–3 refer to the following molecules:

- (A) Proteins
 - (B) Monosaccharides
 - (C) Lipids
 - (D) DNA
 - (E) RNA
1. Contain carbon, hydrogen, and oxygen in a 1:2:1 ratio
 2. Are often not soluble in water
 3. This group includes enzymes

Questions 4–6 refer to the following groups:

- (A) Producer
 - (B) Primary consumer
 - (C) Secondary consumer
 - (D) Tertiary consumer
 - (E) Decomposer
4. The group in the food pyramid with the fewest number of members
 5. Creates glucose from carbon dioxide in the atmosphere
 6. Omnivores most often fall into this group

Questions 7–9 refer to the following processes:

- (A) Krebs cycle
 - (B) Oxidative phosphorylation
 - (C) Aerobic respiration
 - (D) Glycolysis
 - (E) Anaerobic respiration
7. Stage at which one molecule of 6-carbon glucose is broken in half to produce two molecules of pyruvate. Two ATP are generated in this stage.
 8. Process occurring in the mitochondria of eukaryotes and resulting in the total oxidation of acetyl-CoA to carbon dioxide. Two ATP are generated in this stage.
 9. Occurs in the fermentation of alcohol

Questions 10–12 refer to the following behavior types:

- (A) Imprinting
 - (B) Habituation
 - (C) Conditioning
 - (D) Insight learning
 - (E) Fixed-action patterns
10. When confronted with a non-harmful stimulus many times, animal will learn to ignore it
 11. When animal associates two unrelated events that occur simultaneously, this is known as
 12. This behavior involves an animal's recognition of its mother.
 13. Of the following, which group's members have the LEAST in common with each other?
 - (A) Species
 - (B) Order
 - (C) Family
 - (D) Phylum
 - (E) Kingdom

14. A culture of animal cells and a culture of plant cells are pulverized and tested for the presence of several different molecules. Which of the following molecules should be significantly more prevalent in the plant cell sample?
- (A) Glucose
 - (B) Deoxyribonucleic acid
 - (C) Adenosine triphosphate
 - (D) Cholesterol
 - (E) Cellulose
15. Which of the following is the best example of exponential population growth?
- (A) A population of pigeons in a small town grows until there are few nesting areas left.
 - (B) The salmon population in the Yukon River grows rapidly, greatly increasing the food supply for bears in the area.
 - (C) Dandelions grow in a field until they cover the entire expanse.
 - (D) Bacteria in a lab grow in many petri dishes and are transferred to new empty dishes as the old dishes begin to fill.
 - (E) The population of buffalo in the Great Plains is severely diminished by hunting and development.
16. A person becomes anemic when they are not getting enough oxygen to their body. Which of the following could cause someone to be anemic?
- (A) A deficiency in white blood cells
 - (B) A deficiency in red blood cells
 - (C) A low platelet count
 - (D) Too little plasma in the bloodstream
 - (E) An abnormally high T-cell count
17. Natural selection refers to all of the following EXCEPT
- (A) Individual organisms differ from one another.
 - (B) Competition exists between individuals.
 - (C) The best-adapted organisms are most likely to survive.
 - (D) The best-adapted organisms are most likely to reproduce.
 - (E) The traits an organism acquires in its lifetime are passed down to its offspring.
18. Which of the following is the best example of an ecological community?
- (A) All of the pigeons inhabiting a city
 - (B) A school of trout in the Mississippi River
 - (C) Tropical rain forests worldwide and all of the organisms that inhabit them
 - (D) All of the plants, insects, rodents, and predators inhabiting a small island
 - (E) An ant colony
19. Which of the following is the best description of a protein molecule?
- (A) Small building blocks called amino acids linked together in one or more chains
 - (B) Small building blocks called amino acids linked together in a ring
 - (C) Small building blocks called nucleotides linked together in a helical structure
 - (D) Small building blocks called monosaccharides linked together in a chain
 - (E) A glycerol molecule linked to three hydrocarbon chains
20. The DNA sequence TTATTAGACCT is transcribed to the RNA sequence
- (A) TCCAGATTATT
 - (B) GGCGGCUCAAG
 - (C) TTUTTUGUCCT
 - (D) UUTUUTCUGGU
 - (E) AAUAAUCUGGA

21. When a fertilized egg implants in the uterine lining, the lining is not shed in menstruation but remains to support pregnancy. What initially signals this change?
- (A) The release of hormones by the newly developing embryo
 - (B) The release of estrogen by the ovaries
 - (C) The release of enzymes by the uterine wall
 - (D) The release of enzymes by the placenta
 - (E) The release of hormones from the pituitary gland
22. Gaps in the fossil record, the only direct evidence for historical evolution, may be attributed to all of the following EXCEPT
- (A) Fossilization is an improbable event
 - (B) Fossilization requires sedimentary rock
 - (C) Erosion
 - (D) Many fossils have yet to be found
 - (E) Specimens were enclosed in rocks formed from hardened sediments
23. You are told that an unidentified cell contains a single, circular DNA molecule but no defined nucleus. Which of the following is it also possible for the cell to possess?
- I. Chloroplasts
 - II. Cell wall
 - III. Ribosomes
- (A) I only
 - (B) III only
 - (C) I and II only
 - (D) II and III only
 - (E) I, II, and III
24. Nitrogen in the atmosphere gets converted into a usable form by
- (A) Photosynthesis
 - (B) Respiration
 - (C) Digestion
 - (D) Nitrogen-fixing bacteria
 - (E) Decomposition
25. Monerans are
- (A) Eukaryotes
 - (B) Fungi
 - (C) Prokaryotes
 - (D) Multicellular
 - (E) Plants
26. Which of the following was NOT a component of the Earth's early atmosphere?
- (A) Oxygen
 - (B) Water
 - (C) Methane
 - (D) Hydrogen
 - (E) Ammonia

27. A blood vessel has thick muscular walls. This blood vessel is

- I. An artery
 - II. Carrying oxygenated blood
 - III. Carrying blood away from the heart
- (A) I only
(B) III only
(C) I and II only
(D) I and III only
(E) I, II, and III

28. Which of the following statements is true about the energy flow through the food pyramid?

- (A) The most energy is at the top of the pyramid, with the tertiary consumers, because energy increases at each level.
(B) The most energy is at the bottom of food pyramid because some is lost as it pass from producer to trophic levels.
(C) The energy is distributed equally at each level of the pyramid; very little is lost or added.
(D) Energy doesn't flow through the food pyramid; each level receives energy from the sun.
(E) It depends on the ecological community; in some, there is more energy at the top of the food pyramid, and in others, there is more energy at the bottom.

29. The toxic chemical produced by anaerobic respiration is

- (A) Pyruvate
(B) Lactic acid
(C) Acetyl-CoA
(D) NADH
(E) Coenzyme

30. One of the functions of human white blood cells is to ingest and destroy harmful agents, such as bacteria, that find their way into the bloodstream. In order to perform this function, you could expect a white blood cell to have a higher than average number of

- (A) Ribosomes
(B) Peroxisomes
(C) Chloroplasts
(D) Lysosomes
(E) Chromosomes

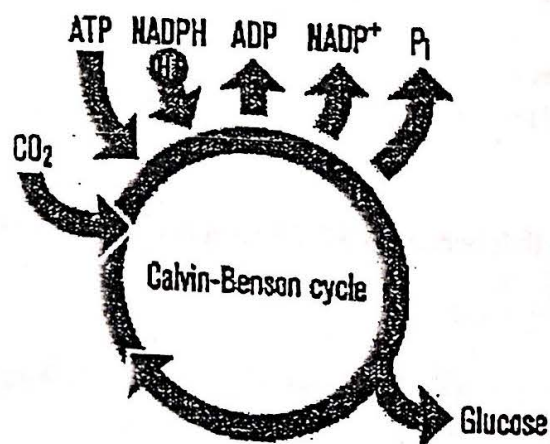
Questions 31–35 refer to the following diagram.

31. This diagram represents

- (A) Aerobic respiration
(B) Photophosphorylation
(C) Light-dependent photosynthesis
(D) Light-independent photosynthesis
(E) Anaerobic respiration

32. This process occurs in the

- (A) Stroma of chloroplasts
(B) Cytoplasm of palisade cells
(C) Inner membrane of mitochondria
(D) Nucleus
(E) Endoplasmic reticulum



33. ATP stands for

- (A) Accelerated transport protein
- (B) Adenosine triphosphate
- (C) Activated transphosphate
- (D) Adenine tripeptide
- (E) Adenosine diphosphate

34. The synthesized glucose will most likely be stored as

- (A) Sucrose
- (B) Starch
- (C) Cellulose
- (D) Glycogen
- (E) Glucose

35. How is the Calvin cycle similar to the Krebs cycle?

- (A) The starting compound is regenerated at the end of the cycle.
- (B) Multiple molecules of ATP are produced.
- (C) Both occur in mitochondrial inner membranes.
- (D) Both produce oxygen gas.
- (E) Each is present in all prokaryotes.

Questions 36–39

A copperhead snake (*Agkistrodon contortrix*) and a canary (*Serinus canarius*) are both being studied in a zoological laboratory.

36. During the night, the air temperature in the lab falls. What happens to the two organisms' metabolic rates?

- (A) Both remain stable
- (B) Both increase
- (C) Snake's decreases, canary's remains stable
- (D) Both decrease
- (E) Canary's decreases, snake's increases

37. The copperhead has tiny leg bones along its skeleton. These structures are

- (A) Mutations
- (B) Homologous
- (C) Analogous
- (D) Vestigial
- (E) Convergent

38. All of the following are true about endotherms EXCEPT

- (A) They inhabit a wide range of environments.
- (B) They typically become more active with warmer temperatures.
- (C) They maintain body temperatures higher than their surroundings.
- (D) They are all heterotrophs.
- (E) They evolved relatively later than ectotherms.

39. Which of the following distinguishes the canary from the copperhead?

- (A) Four-chambered heart
- (B) Thick-shelled eggs for survival on land
- (C) Vertebral column
- (D) Bony skeleton
- (E) Closed circulatory system

Questions 40-44 refer to the following

40. Structure 2 pushes food down into stomach through successive waves of smooth muscles contractions called

- (A) Diaphragm contractions
- (B) Peristaltic contractions
- (C) Hiccup contractions
- (D) Diastolic contractions
- (E) Hepatic contractions

41. The majority of the digestion and absorption occurs in structure

- (A) 3
- (B) 4
- (C) 5
- (D) 6
- (E) 7

42. Bile plays an important role in the digestion process because it

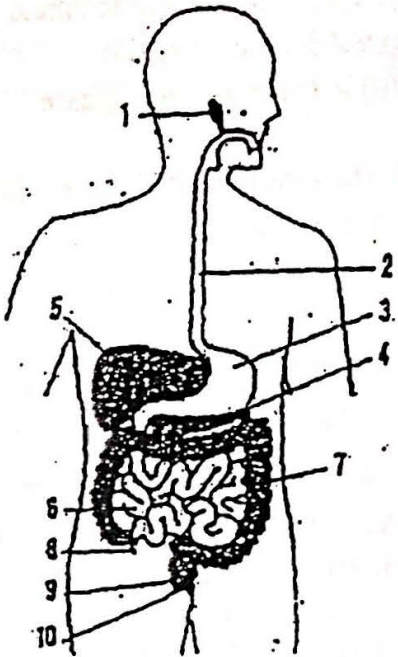
- (A) Chemically digests starches that would otherwise be eliminated as waste
- (B) Controls E. coli activity in the large intestine
- (C) Emulsifies fat globules to increase surface area for eventual chemical digestion
- (D) Protects gall bladder from infection
- (E) Enhances the absorption power of the villi

43. Excessive acid in the stomach can result in a hole in the wall of the organ. What is this hole called?

- (A) Tumor
- (B) Cancer
- (C) Boil
- (D) Ulcer
- (E) Hemorrhoid

44. Structure 1 secretes

- (A) Proteases to breakdown proteins
- (B) Salivary amylase to breakdown carbohydrates
- (C) Emulsifiers to break up fats
- (D) Lipases to breakdown lipids
- (E) Proteases to breakdown carbohydrates



2. 45. A B C D.

If the diagram above represents genes on a chromosome, which genes would have the highest frequency of recombination between them?

- (A) A and B
- (B) A and D
- (C) B and C
- (D) B and D
- (E) The frequencies are the same for all crossovers

Questions 46-49 refer to the following diagram of root

46. Which part is responsible for protection during root growth?

- (A) Root hairs
- (B) Zone of cell division
- (C) Zone of elongation
- (D) Zone of differentiation
- (E) Root cap

47. Which part of the root represents the meristematic cells?

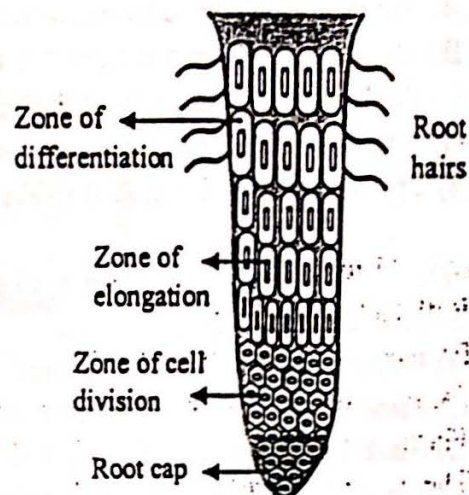
- (A) Root hairs
- (B) Zone of cell division
- (C) Zone of elongation
- (D) Zone of differentiation
- (E) Root cap

48. The zone at which cell are specialized is

- (A) Root hairs
- (B) Zone of cell division
- (C) Zone of elongation
- (D) Zone of differentiation
- (E) Root cap

49. Help in anchoring and increase surface area for absorption

- (A) Root hairs
- (B) Zone of cell division
- (C) Zone of elongation
- (D) Zone of differentiation
- (E) Root cap



Questions 50-53 refer to the following experiment

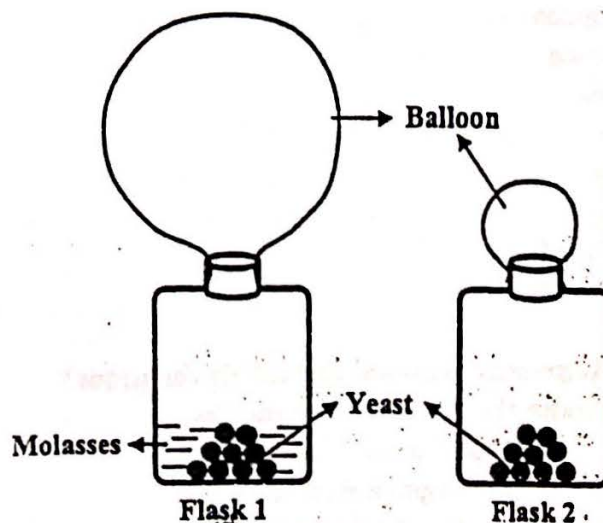
Two flasks containing yeast and sealed with balloons, one of them contains molasses (flask 1) and the other does not (flask 2). Both flasks are kept at room temperature for 24 hours.

50. Molasses is a source of

- (A) Maltose
- (B) Lactose
- (C) Glucose
- (D) Galactose
- (E) Carbon

51. The balloon in flask 1 is inflated with

- (A) N_2
- (B) CO_2
- (C) H_2
- (D) CH_4
- (E) O_2



2. The explanation for the inflation in flask 1 balloon only is that
- (A) There is a difference between temperature in flask 1 and 2
 - (B) The amount of yeast in flask 1 is more than that in flask 2
 - (C) Flask 2 is not tightly sealed with the balloon
 - (D) Yeast in flask 1 respired while yeast in flask 2 did not
 - (E) The species of yeast in the 2 flasks are not the same

53. What will happen if both flasks are kept at lower temperature?

- (A) Both balloons will be inflated
- (B) Both balloons will not be inflated
- (C) Same results as keeping them at room temperature
- (D) Flask 1 balloon will inflate in a slower rate, while flask 2 balloon will not be inflated
- (E) The data are not enough for accurate expectation

Questions 54–57 cystic fibrosis is (CF) caused by gene mutation on autosomal chromosome, where a single nucleotide is omitted during the copying of a normal DNA sequence.

54. This type of mutation is known as

- (A) Frame-shift
- (B) Point mutation
- (C) Insertion
- (D) Silent mutation
- (E) Crossing-over

55. The CF gene is recessive. Assuming that genes are not the product of mutations, a CF patient must have inherited CF genes from

- (A) Mother only
- (B) Father only
- (C) Both parents
- (D) Mother if the child is male
- (E) One parent who is a CF patient

56. Mutations can occur during

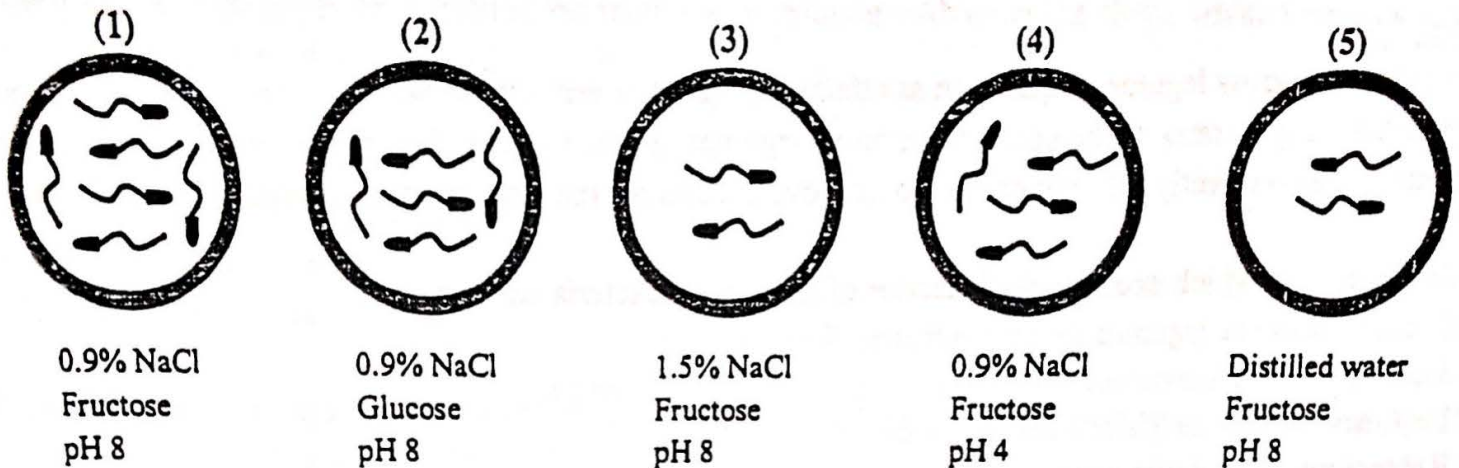
- I. Transcription
- II. Translation
- III. Meiosis
- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I, II, and III

57. Why are frame-shift mutations particularly dangerous?

- (A) They shorten the length of chromosomes.
- (B) No other mutation changes phenotypes.
- (C) They prevent transcription from occurring.
- (D) They affect all codons following the mutation.
- (E) Future offspring will be sterile.

Questions 58-60 refer to the following experiment

Five plates containing sperms are prepared as shown in the following diagram



58. The sperm motility in plate 2 is slower than that in plate 1 because

- (A) Tails of plate 1 sperms are longer than that of plate 2
- (B) Sperms use glucose not fructose in respiration
- (C) Sperms use fructose not glucose in respiration
- (D) Sperms use both glucose and fructose in respiration
- (E) Sperms in plate 1 have more mitochondria than that of plate 2

59. Osmosis caused death in which of the following plates

- (A) 1 and 2
- (B) 2 and 3
- (C) 3 and 4
- (D) 3 and 5
- (E) 4 and 5

60. From the data shown above, a researcher can conclude that

- (A) Sperms prefer alkaline pH
- (B) Sperms prefer neutral pH
- (C) Sperms prefer hypotonic solutions
- (D) Sperms prefer hypertonic solutions
- (E) Sperms prefer glucose for respiration

E SECTION

Questions 61-64

Farmers frequently grow legume crops, such as alfalfa, as "green cover" during winter seasons. By their association with nitrogen-fixing bacteria of the genus *Rhizobium*, legumes produce a great deal of nutrients, so much so that alfalfa is sometimes plowed directly into the ground to improve the soil for the next rotation of crops.

61. Of the following, which explains the behavior of *Rhizobium* bacteria and legumes?
- (A) *Rhizobium* cause legumes to grow nitrogen-fixing fungus
 - (B) *Rhizobium*, in the legumes' root nodules, fix nitrogen from the soil
 - (C) Legumes synthesize *Rhizobium* and release them into the soil
 - (D) *Rhizobium* break down nitrogen gas absorbed through legumes' leaves
 - (E) *Rhizobium* steadily decompose the roots of legumes to fix nitrogen
62. The relationship between legumes and nitrogen-fixing bacteria demonstrates
- (A) Mutualism
 - (B) Commensalism
 - (C) Parasitism
 - (D) Predation
 - (E) Convergent evolution
63. Plants may use the ammonia (NH_3) released by nitrogen-fixing bacteria to synthesize all of the following EXCEPT
- (A) Cytosine
 - (B) Methionine
 - (C) Enzymes
 - (D) Carrier proteins
 - (E) Cellulose
64. The process by which some bacteria transform ammonia (NH_3) into gaseous N_2 in the atmosphere is called
- (A) Transpiration
 - (B) Nitrogen fixation
 - (C) Denitrification
 - (D) Ammonifying
 - (E) Nitrification
65. Of the following, evolutionary fitness is best characterized by
- (A) Changes in the gene pool of a population
 - (B) An organism's ability to contribute to the next generation's gene pool
 - (C) Increasing complexities in the features of a species
 - (D) The formation of a new species
 - (E) The development of more humanlike traits
66. Of the following, what best explains how animals obtain the nitrogen and amino acids they require to survive?
- (A) By eating plants that have obtained nitrogen from bacteria or other animals that have eaten these plants
 - (B) By ingesting nitrogen-fixing bacteria from the soil
 - (C) Through simple respiration of nitrogen in the atmosphere, absorbed either through skin or lungs
 - (D) By providing nitrogen-fixing bacteria a habitat within their own bodies
 - (E) By drinking water that contains dissolved nitrogen

Questions 67-69

A scientist incubates several geese eggs in a laboratory until they hatch.

67. The goslings' first experience outside the shell is an encounter with a ticking clock, which they take to be their "mother." What best describes their reaction?
- (A) Fixed-action pattern
 - (B) Imprinting
 - (C) Conditioned reflex
 - (D) Associative learning
 - (E) Intuitive reasoning
68. The experimenter rings a small bell before each feeding of the goslings, after few days the goslings scramble toward the hatch of their pen at the sound of the bell. This is due to
- (A) Imprinting
 - (B) Instinctual behavior
 - (C) Associative learning
 - (D) Habituation
 - (E) Intuitive reasoning
69. What experiment would best test the goslings' capacity for intuitive reasoning?
- (A) Placing their food at the end of a maze
 - (B) Ringing a bell but no longer bringing food
 - (C) Providing food after a gosling presses a small switch
 - (D) Hanging the food out of reach with a movable step nearby
 - (E) Bringing more food than the goslings can eat

Questions 70-73

Three types of mites were introduced to three groups of rats to observe their interactions. The mites and rats established a symbiotic relationship in each case. The experimenter observed the groups and their individual rats for two weeks.

End of 2 weeks	Rat individuals	Rat population
Group 1	More vigorous and healthy	Shows increase
Group 2	No observable change	No change
Group 3	Sickly and desiccated	Decrease

70. What relationship exists between the two species in colony 1?
- (A) Parasitism
 - (B) Commensalism
 - (C) Mutualism
 - (D) Predation
 - (E) Competition
71. During the observation period, the mite population could potentially increase in
- I. Group 1
 - II. Group 2
 - III. Group 3
 - (A) I only
 - (B) II only
 - (C) III only
 - (D) I and II only
 - (E) I, II, and III

72. A month after the initial observations, the population of rats in group 3 remains constant. What best explains this?
- (A) Parasites commonly do not eradicate their hosts.
 - (B) The hosts establish a commensalistic relationship with the parasites.
 - (C) The hosts begin to prey on the parasites.
 - (D) The parasites die off from starvation.
 - (E) Pathogenic bacteria kill off the parasites.

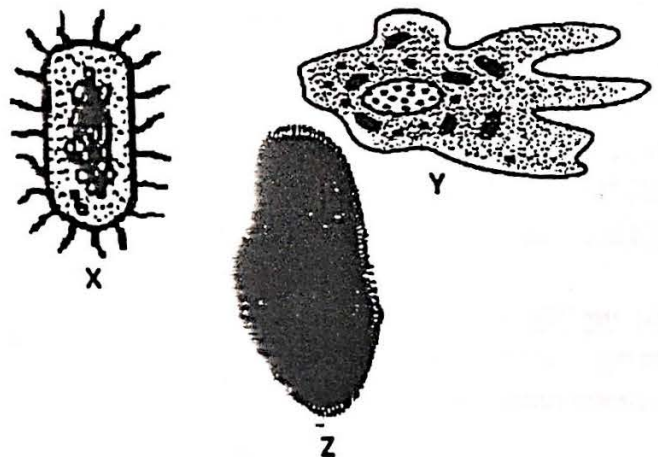
73. The introduction of a new organism into a population can create
- (A) New mutations
 - (B) New selection pressure
 - (C) Adaptive radiation
 - (D) Genetic drift
 - (E) Biological magnification

Questions 74-78 refer to the following experiment

A student observes three unicellular organisms under a light microscope, and makes these renderings.

74. Which of these cells are protists?

- I. Cell X
 - II. Cell Y
 - III. Cell Z
- (A) I only
 - (B) II only
 - (C) III only
 - (D) II and III only
 - (E) I, II, and III



75. The oozing arms of cell Y are called

- (A) Pseudopods
- (B) Flagellates
- (C) Vacuoles
- (D) Cilia
- (E) Lysosomes

76. What structure is common to all three cells?

- (A) Cell wall
- (B) Nucleus
- (C) Mitochondria
- (D) Cilia
- (E) Ribosomes

77. Cell X could be all of the following EXCEPT

- (A) Moneran
- (B) Prokaryotic
- (C) Heterotrophic
- (D) Autotrophic
- (E) Eukaryotic

78. The cell wall in cell X is composed of

- (A) Chitin
- (B) Cellulose
- (C) Glucose
- (D) Glycogen
- (E) Peptidoglycan

79. Which of the following organisms are heterotrophs?

I. Ferns

II. Deer

III. Tigers

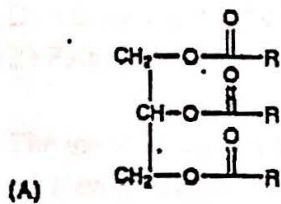
- (A) I only
- (B) III only
- (C) I and II only
- (D) II and III only
- (E) I, II, and III

80. Which of the following is the best example of a biome?

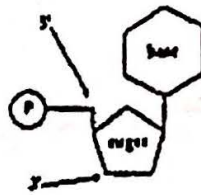
- (A) A rocky cave
- (B) A dry riverbed
- (C) An expansive deciduous forest
- (D) A tern nesting area and the terns that inhabit it
- (E) The fish that inhabit the area around a coral reef

M-SECTION

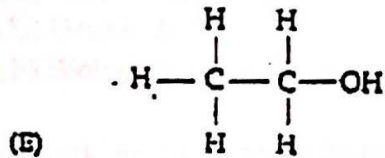
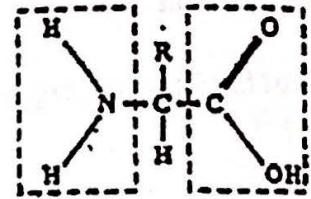
Questions 81 - 84



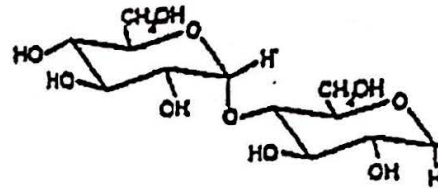
(B)



(C)

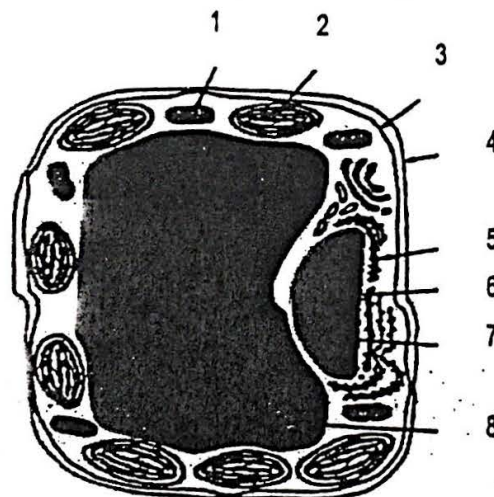


(D)



- 81. Building block of DNA or RNA
- 82. Building block of proteins
- 83. Lipid
- 84. Carbohydrate

Questions 85-88 refer to the diagram, which represents a single cell of an organism.



85. The movement of ions into and out of the cell is controlled by structure

- (A) 1
- (B) 2
- (C) 3
- (D) 5
- (E) 6

86. Which of the following structures would be absent if this was an animal cell?

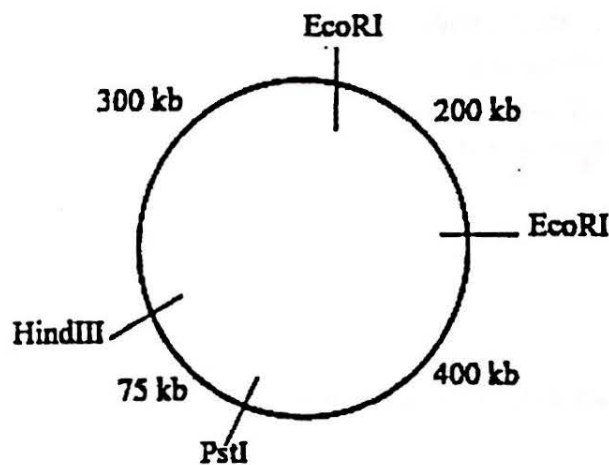
- (A) 2
- (B) 3
- (C) 5
- (D) 6
- (E) 7

87. RNA associated with structure 5 support that
- (A) Genetic information coded in a double helix
 - (B) Photosynthesis occurs in the cell
 - (C) The cell moves about freely
 - (D) The cell can synthesize certain proteins
 - (E) Respiration occurs in the cell

88. Structure 1 is found in both plant and animal cells because both

- (A) Pump out excess water
- (B) Require energy
- (C) Divide by using centrioles
- (D) Move by using cilia
- (E) Convert light energy to chemical energy

89. What fragments would be produced if the following plasmid were to be digested with EcoRI and HindIII to completion?



- (A) 200 kb, 300 kb, and 475 kb
- (B) 200 kb and 300 kb
- (C) 600 kb, 475 kb, 375 kb, and 500 kb
- (D) 200 kb, 300 kb, 400, and 75 kb
- (E) 200 kb and 775 kb

90. In the accompanying table, which amino acid sequence would most likely be determined by a section of a DNA molecule with the base sequence C-C-G-T-C-T-A-C-C?

Amino Acid	Messenger RNA Codon
Alanine	GGC
Arginine	AGA
Leucine	CUA
Tryptophan	UGG

- (A) Alanine – arginine - tryptophan
- (B) Alanine – arginine - leucine
- (C) Arginine – leucine - tryptophan
- (D) Arginine – alinine - leucine
- (E) Tryptophan – leucine - arginine

Questions 91-93

Scientists have made a biochemical comparison of five types of proteins found in both humans and chimpanzees. Their findings are summarized in the following table:

Protein	Amino Acid Differences	Number of Amino Acids
Hemoglobin	1	579
Myoglobin	1	153
Cytochrome c	0	104
Serum Albumin	6*	580
Transferrin	8*	647

*approximate

91. According to this table, humans and chimpanzees

- (A) Have equal amounts of all the proteins
- (B) Have equal amounts of the amino acids
- (C) Have equal amounts of serum albumin
- (D) Are most similar in their transferrin
- (E) Are most similar in their cytochrome c

92. The largest protein in the list is

- (A) Hemoglobin
- (B) Myoglobin
- (C) Cytochrome c
- (D) Serum albumin
- (E) Transferrin

93. The results for cytochrome c lead to the conclusion that

- (A) Neither humans nor chimpanzees need it in their respiratory chain
- (B) Both humans and chimpanzees differ in their amino acids for this protein
- (C) Humans and chimpanzees are closely related in their evolutionary origin
- (D) Fossils for humans and chimpanzees have identical DNA
- (E) Humans and chimpanzees have identical hemoglobin

94. A protein's tertiary structure refers to the

- (A) Amino acid sequence
- (B) Attachment sites for ribosomes
- (C) Three-dimensional folding of the polypeptide
- (D) Sequence of nucleotides
- (E) Binding sites for oxygen

95. The 5-carbon sugar in DNA is

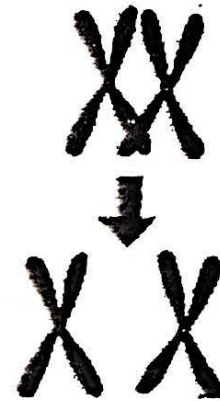
- (A) Deoxyribose
- (B) Ribose
- (C) Glucose
- (D) Fructose
- (E) Pentane

96. Thyroid cells need to maintain a high concentration of iodide in order to produce the hormone thyroxin. Which of the following is most likely about the flow of iodide into the thyroid cells?
- (A) The iodide passively diffuses through the cell membrane into the thyroid cells, requiring no ATP.
 - (B) The iodide passively diffuses through specialized channels in the cell membrane, requiring no ATP.
 - (C) The iodide is transported into the cell by the Golgi apparatus of the thyroid cells, requiring ATP.
 - (D) The iodide flows into the cell by osmosis, requiring no ATP.
 - (E) The iodide is actively transported through the cell membrane, requiring ATP.

Questions 97–100 refer to the following diagram, which depicts an interaction between a homologous pair of chromosomes.

97. This transfer of genetic material is called

- (A) Transcription
- (B) Transduction
- (C) Crossing-over
- (D) Translation
- (E) Substitution



98. The depicted exchange of genetic material can occur during

- (A) Prophase I of meiosis
- (B) Anaphase I of meiosis
- (C) Telophase of mitosis
- (D) Metaphase II of meiosis
- (E) Interphase of mitosis

99. After the chromosomes exchange material, which of the following could NOT result in the next generation?

- (A) Adaptive mutation
- (B) Same phenotype
- (C) Debilitating mutation
- (D) Change in diploid number
- (E) Further transfers of genetic material

100. The exchange of genetic material only occurs in sexual reproduction and offers a significant advantage over asexual reproduction. Why?

- (A) Genetic recombination increases variation of species.
- (B) Random mutations are usually beneficial.
- (C) It alters the number of base pairs in the species' genetic code.
- (D) It increases reproduction rates.
- (E) It provides stability in the gene pool.

END OF TEST