

Biology questions second batch

- 1) A normal body cell of a fruit fly contains eight chromosomes. Each normal gamete of this organism contains only four chromosomes, as a result of the process of

(goal 3)

- A) Binary fission
- B) Germination
- C) Meiosis
- D) Vegetative propagation

- 2) The diagram below illustrates fertilization in a human.



Which type of individual might result from this fertilization?

(goal 3)

- A) A $3n$ individual
- B) An individual with Down syndrome
- C) A normal diploid individual
- D) A monoploid, colorblind individual

- 3) A scientist recently discovered a pond organism that is unicellular, contains chloroplasts and other membrane-bound organelles, and possesses a flagellum. In which kingdom is this organism classified?

(goal 4)

- A) Fungi
- B) Monera
- C) Plant
- D) Protista

- 4) The diagram below represents Watson and Crick's model of DNA.



Which substance could be indicated by the arrow?

(goal 3)

- A) Deoxyribose
- B) Ribose
- C) Thymine
- D) Uracil

- 5) Structure A *most likely* results from



(goal 4)

- A) Mitotic growth
- B) Meiotic growth
- C) Fertilization
- D) Cloning

- 6) Which factor promotes competition between organisms in an ecosystem?

(goal 5)

Biology questions second batch

- A) Cycling of minerals
B) Decomposition of organic matter
C) **limited resources**
D) Presence of fungi
- 7) Which of the organelles functions like an oil refinery, turning “unrefined” yet energy-rich raw materials into compounds that cells can use?
(goal 2)
A) Mitochondrion
B) Nucleus
C) Ribosome
D) Vacuole
- 8) Which of the organelles functions like an assembly line in a factory, using blueprints encoded on RNA to link amino acids into proteins?
(goal 2)
A) Chloroplasts
B) Mitochondrion
C) Ribosome
D) Vacuole
- 9) Rigidity in a plant cell wall is **most likely** due to the presence of which substance?
(goal 2)
A) Cellulose
B) Chlorophyll
C) Hemoglobin
D) Starch
- 10) Which statement **best** identifies a Eukaryotic cell?
(goal 2)
A) They contain genetic material.
B) They grow, reproduce and respond to their environment.
C) They contain a nucleus.
D) They are generally small and simple.
- 11) Just before a eukaryotic cell divides, the DNA in the nucleus condenses to form which of the following:
(goal 2)
A) Chromosomes
B) Nuclear envelope
C) Nucleolus
D) Ribosomes
- 12) Which word **best** describes the function of the vacuole?
(goal 2)
A) Energy
B) Modifiers
C) Storage
D) Transport
- 13) Which statement **best** describes the process of osmosis.
(goal 2)
A) The diffusion of molecules from between an organelle and the rest of the cytoplasm.
B) The diffusion of molecules through the cell wall.
C) Movement of molecules from an area of high concentration to an area with low concentration through a semi-permeable membrane.
D) Movement of water from an area of high concentration to an area with low concentration through a semi-permeable membrane.
- 14) Compare these two molecules
I) C – T – G – A – T – C
II) C – U – G – A – U – C
Which statement best describes these molecules?
(3.01a)
A) Molecule I is found in the

Biology questions second batch

- nucleus and contains ribose.
- B) Molecule I is found in the cytoplasm and contains ribose
- C) Molecule II is found in the cytoplasm and contains ribose
- D) Both molecules are found in the nucleus and cytoplasm and both contain ribose
- 15) Which statement best describes mRNA?
- (3.01b)
- A) Amino acids attach directly to the mRNA
- B) The molecule is located *only* in the cytoplasm and is single-stranded
- C) MRNA contains a different base than DNA and is single-stranded
- D) The molecule is double stranded and contains ribose.
- 16) X-rays are known to cause mutations in the DNA that code for proteins that control the steps of the cell cycle. Which problem would this mutation most likely cause?
- (3.01c)
- A) Brain damage
- B) Cancer
- C) Diabetes
- D) Herpes
- 17) Jill and Ken are expecting their first child. Both Jill and Ken have type O blood. What type of blood is possible for their child?
- (3.03b)
- A) A, B, AB or O
- B) A or B
- C) AB only
- D) O only
- 18) One of the traits that Mendel studied in pea plants was height. He found that when he crossed a true breeding tall plant with a short plant, the resulting offspring were all tall. What description did Mendel use to describe the tall allele?
- (3.03c)
- A) Dominant
- B) Genotype
- C) Phenotype
- D) Recessive
- 19) The cross shown below indicates that flower color is inherited by which pattern?
- Red x White
|
Pink
- (3.03a)
- A) Dominance and recessiveness
- B) Gene mutation
- C) Incomplete dominance
- D) Asexual reproduction
- 20) According to Mendel's law of segregation, a heterozygous tall pea plant *could* produce gametes with which alleles?
- (3.03c)
- A) b
- B) B
- C) Either B or b
- D) Neither B or b
- 21) The allele for yellow peas (Y) is dominant to the allele for green peas

Biology questions second batch

- (y). The phenotype of a pea that is Yy would be
(3.03e)
A) Brown
B) Green
C) Yellow-green
D) Yellow
- 22) What evidence *best* supports the theory of evolution by natural selection?
(3.05a)
A) The fact that a horse and a donkey can produce a mule
B) The variety of finches on the Galapagos Islands
C) A dolphin and a whale are both mammals
D) A human and a chimp have similar DNA
- 23) Which of the following shows evidence that Eukaryotic cells may have evolved by taking in prokaryotic cells?
(3.05b)
A) Mitochondria and chloroplasts have their own DNA
B) Every nucleus is surrounded with a membrane
C) Bacteria can reproduce sexually or asexually
D) Some bacteria can do photosynthesis
- 24) Evidence shows that there was no oxygen in the atmosphere when Earth was very young. Fossil evidence shows that life has evolved from very simple organisms to more complex. These two statements suggest that the first organisms to exist on Earth were *most likely*:
(3.05b)
A) Eukaryotic and Aerobic
B) Eukaryotic and Anaerobic
C) Prokaryotic and Aerobic
D) Prokaryotic and Anaerobic
- 25) Which of the following is a pattern that can be seen in the fossil record?
(3.05c)
A) Throughout history every organism has evolved at about the same rate.
B) Throughout history humans have caused many organisms to become extinct
C) Throughout history organisms have become bigger and stronger.
D) Throughout history organisms have become more and more complex
- 26) The fact that the amino acid sequence of a specific protein is almost the same in both yeast and humans suggest that:
(3.05c)
A) Humans and yeast share a distant common ancestor
B) Yeast are just as complex as humans
C) Humans evolved from yeast
D) Yeast evolved from humans
- 27) What *might* cause a population of squirrels to have many individuals with dark and light fur, but few

Biology questions second batch

- individuals with the intermediate color?
(3.05d)
- A) The intermediate color is a better fit for survival
 - B) The light and dark colors are a better fit for survival.
 - C) The light and dark colors are easier to see.
 - D) The intermediate color detracts predators
- 28) If the population of squirrels from the previous question continues to change until there are no intermediate colored squirrels, what **could** happen to cause the population to split into two separate species?
(3.05d)
- A) A new predator is introduced in the area that easily finds and eats the light colored squirrels.
 - B) The dark and light colored squirrels begin to sexually isolate themselves from each other
 - C) Some intermediate colored squirrels begin showing up again in the population
 - D) The dark and light colored squirrels begin to mate with other species.
- 29) Which **most** correctly illustrates the concept of “survival of the fittest?”
(3.05)
- A) Attraction of mates is beneficial in a population
 - B) Birds become overpopulated and reduce available resources
 - C) Minerals are depleted from the soil with overgrowing
 - D) Tsunamis destroy entire populations of insects.
- 30) If a woman with skin cancer gets pregnant, her newborn child will **most likely**
(3.02)
- A) Not get skin cancer because skin cancer is a local mutation
 - B) Not get skin cancer because the child will be immune to skin cancer
 - C) Get skin cancer because the mother was exposed to the sun during pregnancy
 - D) Get skin cancer because skin cancer cells move from mother to child in the womb
- 31) Genetic testing of the Y chromosome and mitochondrial DNA can give a partial map of your

Biology questions second batch

- ancestry. This ancestry includes genetic information from your
- (3.02)
- A) Maternal grandmother
 - B) Maternal grandfather
 - C) Paternal grandmother
 - D) Paternal grandmother's father
- 32) Bacteria DNA can be spliced into human DNA because
- (3.04)
- A) Bacteria are more closely related to animals
 - B) Bacteria DNA and human DNA are chemically identical**
 - C) The bacteria genome is not as long as the human genome
 - D) Bacteria are disease causing organisms that infect humans.
- 33) In Siberian husky dogs, brown eyes are dominant to blue eyes. A pair of brown-eyed dogs have a litter of puppies. Three puppies have blue eyes and three have brown eyes. What is the probable genotype of the parents?
- (3.03a)
- A) BB x bb
 - B) Bb x bb
 - C) Bb x Bb**
 - D) BB x BB
- 34) Which of the following is a list of elements that make up the structure of a carbohydrate?
- (2.01)
- A) Carbon, nitrogen, oxygen
 - B) Hydrogen, carbon, oxygen**
 - C) Nitrogen, sulfur, oxygen
 - D) Oxygen, carbon, phosphorous
- 35) Which of the following statements **best** describes a function of an enzyme?
- A) One enzyme works on several types of substrates
 - B) Enzymes are specialized proteins that serve as catalysts**
 - C) Enzymes are carbohydrate-based molecules in all cells.
 - D) The structure of enzymes is changed during a chemical reaction.
- 36) A plant has been removed from its natural environment and placed into a body of water that contains more salt than the inside of each plant cell. This situation is **most similar** to which of the following events?
- (2.03)
- A) Placing a saltwater fish in a freshwater tank
 - B) Placing a freshwater fish in a saltwater tank**
 - C) Placing a saltwater fish from one tank to another saltwater tank
 - D) Placing a freshwater fish from one tank to another freshwater tank
- 37) What is the **main** reason that amphibians lay their eggs in the water?
- (4.03)
- A) The water regulates the

Biology questions second batch

- temperature of the eggs.
- B) The eggs do not have shells, cell membranes surround them
- C) Water provides protection from predators
- D) Eggs incubate more easily in water than on land.
- 38) In vascular plants, what is the purpose of xylem?
- (4.03)
- A) To transport water and dissolved minerals from the roots to the stems and leaves
- B) To transport sugars from the leaves to the rest of the plant
- C) To transport water and dissolved minerals from the leaves to the rest of the plant
- D) To transport excess water and minerals from the plant back to the ground
- 39) How do enzymes speed up chemical reactions?
- (2.04)
- A) By raising the activation energy
- B) By lowering the activation energy
- C) By becoming a reactant
- D) By releasing proteins
- 40) Pavlov's dogs learned to associate hearing a bell with receiving food. Over time, the dogs would salivate when they heard the bell, even if food was not present. This is an example of which type of behavior?
- (4.05)
- A) Agonistic
- B) Innate
- C) Learned
- D) Social
- 41) Which structure in animals *best* simulates the function of cell walls
- (2.02)
- A) Cell membrane
- B) Muscle
- C) Skeleton
- D) Vacuole
- 42) When a dog pants, it is attempting to regulate body temperature. Which word *best* describes this process?
- (2.03)
- A) Cellular respiration
- B) Enzyme activity
- C) Homeostasis
- D) Osmosis
- 43) Which symbiotic relationship is *best* illustrated by a flea living on a dog?
- (5.01)
- A) Commensalism
- B) Mutualism
- C) Parasitism
- D) Predation
- 44) How does transcription compare with translation?
- (3.01)
- A) Both translation and transcription involve mRNA, rRNA, and tRNA.
- B) Transcription uses information from mRNA while translation uses information directly from DNA
- C) Transcription makes a copy of DNA while translation creates a strand of mRNA
- D) Transcription involves making a strand of mRNA while translation involves building a protein from mRNA

Biology questions second batch

- 45) The honeybee coevolved with flowering plants. If a fossil honeybee was found that significantly predated flowering plants, the expected structural differences would include:

(4.03)

- A) Abdomen size
- B) Leg length
- C) Mouth parts
- D) Wingspan

- 46) Sam collected one gram of the following foods. Which should have the most saturated fats?

(2.01)

- A) Butter
- B) Grapes
- C) Olive oil
- D) Sugar

- 47) Which food should give the **most positive** result for lipids when placed on brown paper?

(2.01)

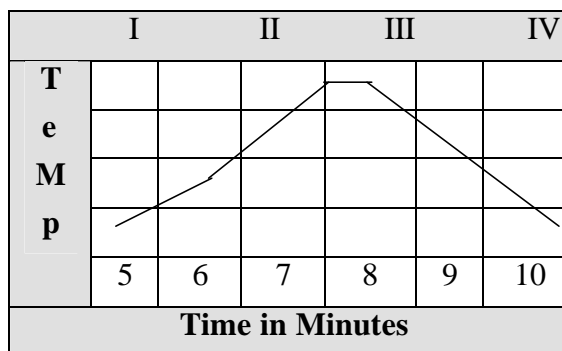
- A) Butter
- B) Grapes
- C) Potato
- D) Sugar

- 48) If a cell were placed in pure water, what would **most likely** happen to the cell?

(2.03)

- A) The cell would burst because cytoplasm entered
- B) The cell would burst because water entered
- C) The cell would collapse because cytoplasm left

- D) The cell would collapse because water left



- 49) Refer to the graph. During which phase does the enzyme begin to denature?

(2.04)

- A) I
- B) II
- C) III
- D) IV

- 50) Refer to the graph. What is the optimal pH for the enzyme ?

(2.04)

- A) Neutral
- B) Slightly acidic
- C) Slightly basic
- D) Strongly acidic

- 51) If a red flower and a white flower reproduce and the F1 generation

Biology questions second batch

- consists of pink flowers, this would **most likely** be the result of:
- (3.03)
- A) Co-dominance
 - B) Homozygous dominant genotype
 - C) Homozygous recessive genotype
 - D) Incomplete dominance**
- 52) In a species of beans, round beans are the dominant trait and oblong beans are the recessive trait. If a homozygous dominant bean plant is crossed with a heterozygous bean plant, what is the **expected** genotypic ratio of the offspring?
- (3.03)
- A) 25% RR, 75% rr
 - B) 50% RR, 50% rr
 - C) 50% RR, 50% Rr**
 - D) 75% Rr, 25% rr
- 53) In a species of beans, round beans are the dominant trait and oblong beans are the recessive trait. If a homozygous dominant bean plant is crossed with a heterozygous bean plant, what is the **expected** phenotypic ratio of the offspring?
- (3.03)
- A) All round
 - B) 75% round 25% oblong**
 - C) 50% round, 50% oblong
 - D) All oblong
- 54) A forest fire burns several acres of trees. What are the **likely** result to the carbon cycle in that area?
- (5.02)
- A) Carbon levels increase and**
 - B) Carbon levels increase and oxygen levels decrease
 - C) Carbon levels decrease and oxygen levels decrease
 - D) Carbon levels decrease and oxygen levels increase
- 55) Some bacteria used in the production of cheese and yogurt change a carbon compound to lactic acid. This takes place
- (2.05)
- A) In the absence of CO₂
 - B) In the absence of O₂**
 - C) In the presence of CO₂
 - D) In the presence of O₂
- 56) Which of the following is an abiotic factor that is found within living organisms?
- (5.01)
- A) Bacteria
 - B) Protein
 - C) Sunlight
 - D) Water**
- 57) Imprinting is considered a learned behavior and is **best** illustrated by which of the following?
- (4.05)
- A) A cat instinctively hunts mice
 - B) A dog associates a bell with food, the bell stimulates salivation A cat instinctively hunts mice
 - C) A duckling recognizes the first object it sees after hatching and follow that object**
 - D) A mouse quickly moves through

Biology questions second batch

- a maze to find food at the end of the maze
- 58) Two cells were viewed under a microscope. Cell A was rounded and contained a dark body in the middle. Cell B was smaller and no dark body was found. Which statement about these cells is correct?
- A) Cell A cannot be an animal cell
B) Cell B is a fungal cell
C) Cell A is a bacterial cell
D) Cell B is a bacterial cell
- 59) Canned pineapple can be used to make a Jell-O salad, but when using fresh pineapple an enzyme keeps the Jell-O from hardening. What is the **most likely** difference in the canned pineapple?
- (2.01)
- A) The enzyme is anaerobic
B) The enzyme must have oxygen to work
C) The enzyme breaks down into a lipid
D) The enzyme is denatured at the high temperature required in the canning process
- 60) While analyzing an unknown cell under the microscope, you notice that there is an absence of membrane bound centralized structures. This cell would **most likely** be classified
- (4.01)
- A) Protist
B) Prokaryote
C) Plant
D) Fungus
- 61) Which organelle is **most** responsible for controlling cell functions?
- (2.02)
- A) Chloroplast
B) Nucleus
C) Mitochondria
D) Vacuole
- 62) Analysis of a cell shows an underproduction (shortage) of proteins. Which of the following organelles is **most likely** missing from the cell?
- (3.01)
- A) Chloroplasts
B) Plasma membrane
C) Mitochondria
D) Ribosomes
- 63) When looking at two different cells under a microscope, one is much smaller and lacks a nucleus. This cell is **most likely** a(n)
- (4.01)
- A) Animal cell
B) Eukaryotic cell
C) Prokaryotic cell
D) Plant cell
- 64) According to the early atmosphere hypothesis, oxygen was not present in the atmosphere on the earth. Which process would be impossible under these conditions?
- A) Aerobic respiration
B) Photosynthesis

Biology questions second batch

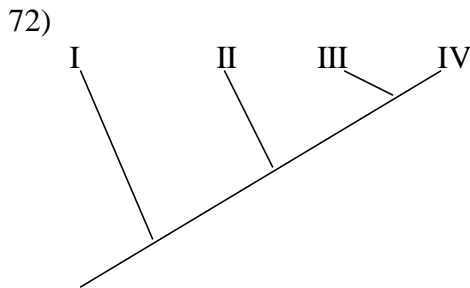
- C) Protein Synthesis
D) Transpiration
- 65) If a mistake were made during transcription, what would *most likely* be the immediate result?
- A) DNA is copied incorrectly
B) The wrong protein is produced
C) A wrong base is inserted into mRNA
D) tRNA matches the wrong amino acid to the mRNA
- 66) A woman heterozygous for blood type A has a child with a man who has blood type O. What percentage of their children *should be expected* to have blood type O?
- (3.03)
A) 0%
B) 25%
C) 50%
D) 75%
- 67) Wood digesting bacteria live inside the gut of termites. Termites use the digested products as food. Which term best describes this relationship?
- (5.01)
A) Commensalism
B) Mutualism
C) Parasitism
D) Predation
- 68) Biologists studying hot springs in Yellowstone National Forest have identified a creature that is unicellular, prokaryotic, and carries out photosynthesis during the day but chemosynthesis at night. Into which of the following groups does the creature *most likely* fit?
- (4.01)
A) Eukaryote
B) Fungi
C) Prokaryote
D) Protist
- 69) Living organisms were once classified as either plant or animals. What factor *best* describes the reason for the six-kingdom system we use today?
- (4.01)
A) Classification systems are changing as new knowledge is developed.
B) Comparative anatomy is a more sophisticated science today.
C) New techniques in DNA analysis have arisen.
D) The study of evolutionary relationships between organisms has advanced.
- 70) A new organism has been found in the rainforest. It is unicellular, heterotrophic, and reproduces sexually. Scientists would *most likely* place this new organism into which kingdom?
- (4.01)
A) Animalia
B) Fungi

Biology questions second batch

- C) Plantae
- D) Protista

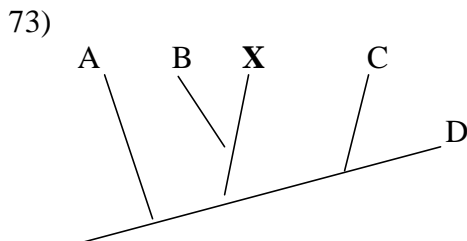
71) Binomial nomenclature uses which of the following categories?

- (4.01)
- A) Class and family
 - B) Genus and species**
 - C) Kingdom and phylum
 - D) Phylum and class



Using the phylogenetic tree above, which two groups are most closely related?

- (4.01)
- A) I, II
 - B) II, III
 - C) III, IV
 - D) IV, I



Use the phylogenetic tree to determine which of the organisms is most closely related to organism X.

- A) A
- B) B**
- C) C
- D) D

74) In the previous example, the majority of the offspring will have what phenotype?

- A) Orange**
- B) Red
- C) Yellow
- D) Red and yellow

75) The brown paper test for lipids is positive when food is placed on the paper and a spot forms which will allow light to pass through it. Which food would give the **strongest** positive test for lipids?

- A) Bread
- B) Carrots
- C) Potato chips**
- D) Sugar

76) What is the function of a cell's selectively permeable membrane?

- A) To regulate energy production in the cell
- B) To keep mitochondria from using nuclear material
- C) To maintain a constant lipid-protein ratio in the cell
- D) To control materials entering and leaving the cell**

77) While observing an *Elodea* plant cell through a microscope, a student noticed some small, moving green disks. These organelles were **most likely** which of the following?

- A) Chloroplasts**
- B) Leucoplasts
- C) Mitochondria
- D) Ribosomes

Biology questions second batch

- 78) At which organelle are proteins manufactured?
- A) Mitochondrion
 - B) Nucleus
 - C) Ribosome
 - D) Vacuole
- 79) A student examines a cell under the microscope and determines that it is a eukaryote. Which structure did the student identify in order to come to this conclusion?
- A) Cell wall
 - B) Nucleus**
 - C) Ribosome
 - D) Vacuole
- 80) The major difference between prokaryotic and eukaryotic cells is the presence or absence of which of the following?
- A) Cell membrane
 - B) Cytoplasm
 - C) Membrane-bound organelles
 - D) Nucleic acids
- 81) Which of the following is found only in eukaryotic cells?
- A) Cell membrane
 - B) Cytoplasm
 - C) DNA
 - D) Mitochondria**
- 82) A plant has been removed from its natural environment and placed into a body of water that contains more salt than the inside of each plant cell. This situation is *most similar* to which of the following events?
- A) A sea plant put into fresh water
 - B) A freshwater plant put into sea water**
 - C) A sea plant put into distilled water
 - D) A land plant put into tap water
- 83) While cleaning a saltwater aquarium, students placed the aquarium plants in a container of distilled water. What effect will this have on the plants?
- A) The plant cells will separate.
 - B) The plant cells will shrink.
 - C) The plant cells will swell.**
 - D) The plant cells will remain the same.
- 84) What would happen to a marine protozoan if removed from its normal habitat and placed into a freshwater pool?
- A) Loss of water through osmosis
 - B) Loss of water through active transport
 - C) Gain of water through osmosis**
 - D) Gain of water through active transport
- 85) What regulates the flow of water through a cell membrane?
- A) The concentration of solutes**
 - B) The absence of a cell wall

Biology questions second batch

- C) The thickness of the membrane
D) The presence of the cell wall
- 86) In the lungs, the movement of carbon dioxide out of cells and oxygen into cells can **best** be explained by which of the following processes?
- A) Active transport
B) Diffusion
C) Endocytosis
D) Osmosis
- 87) Why do most enzymes not function properly after being exposed to high temperatures?
- A) They have been converted to tripeptides.
B) Their water content has been reduced.
C) Their bonding structure has been changed.
D) They have combined with another enzyme.
- 88) Cellular respiration is carried out by which of the following?
- A) All living organisms all of the time
B) Animals but not plants
C) Animals all of the time but plants only at night
D) Heterotrophs but not autotrophs
- 89) Which of the following processes releases the **most** ATP per molecule of glucose for immediate cell use?
- A) Aerobic respiration
B) Anaerobic respiration
C) Chemosynthesis
D) Photosynthesis
- 90) During DNA replication, which of the following segments would be complementary to the original DNA segment of CCTAAT?
- A) CGATTA
B) GGUTTU
C) GGATTA
D) GGAUUA
- 91) Which of the strands below is the complement to the segment GCATCCGA of a DNA molecule?
- A) CCTAGGCT
B) GCATCCGA
C) CGUAGGCU
D) CGTAGGCT
- 92) What type of RNA is responsible for bringing amino acids to the ribosome for protein synthesis?
- A) Messenger RNA
B) Transfer RNA
C) Ribosomal RNA
D) Mitochondrial RNA
- 93) The chart below matches messenger RNA codons with amino acids.
- Messenger RNA Codons**
- | glycine | leucine | alanine | serine |
|-----------------------|------------------------------------|-----------------------|------------------------------------|
| GGU, GGC,
GGA, GGG | UUA, UUG,
CUU, CUC,
CUA, CUG | GCU, GCC,
GCA, GCG | UCU, UCC,
UCA, UCG,
AGC, AGU |
- A DNA strand has the codon TCA. According to the chart, the corresponding messenger

Biology questions second batch

- RNA codes for which of the following amino acids?
- A) Glycine
 - B) Leucine
 - C) Alanine
 - D) Serine**
- 94) The messenger RNA will carry the DNA's instructions out of the nucleus to which of the following?
- A) Vacuole
 - B) Mitochondria
 - C) Chloroplast
 - D) Ribosome**
- 95) To determine the molecular sequence of a gene for a protein, which molecule should be analyzed?
- A) tRNA
 - B) ATP
 - C) DNA
 - D) rRNA**
- 96) If a portion of a DNA strand has the base sequence TACGCA, what will be the base sequence of the mRNA strand transcribed?
- A) TACGCA
 - B) UACGCA
 - C) AUGCGU
 - D) ATGCGT**
- 97) Transcription of the DNA sequence
- A) A sequence of three amino acids, linked by peptide bonds
 - B) A DNA strand with the base sequence TTCGACCCT
 - C) A mRNA strand with the sequence TTCGACCCT
 - D) A mRNA strand with the sequence UUCGACCCU**
- 98) What is the purpose of transfer RNA?
- A) It unzips the double helix so transcription can begin.
 - B) It retrieves amino acids from the cytoplasm for protein construction.**
 - C) It carries genetic information to the ribosomes.
 - D) It produces a complementary copy of a strand of DNA.
- 99) Which statement is true regarding asexual reproduction as a method of producing offspring?
- A) Common among mammals
 - B) Not a method used by plants
 - C) Produces offspring that are genetically identical
 - D) Limited to unicellular organisms**
- 100) Which process is responsible for the diversity of plants within a species?

Biology questions second batch

- A) Cross-pollination
B) Transpiration
C) Self-fertilization
D) Photosynthesis
- 101) What is true about any two normal gametes from a human male parent?
- A) Each has a diploid number of chromosomes.
B) They can combine to form a new organism.
C) Their chromosomes are exactly the same.
D) They have the same number of chromosomes.
- 102) A cell has undergone a meiotic division cycle. In order for the cell to achieve a diploid state, what must occur?
- A) Cleavage
B) Fertilization
C) Meiosis
D) Mitosis
- 103) A human skin cell contains 46 chromosomes. How many chromosomes are present in a human sperm cell?
- A) 23
B) 46
C) 92
D) 138
- 104) Some traits are determined by more than two alleles. If aabbcc is crossed with AABBCC, what would be the genotype of the offspring?
- A) AaBbCc
B) AABBCC
C) aabbcc
D) aaAAbbBBccCC
- 105) In a genetics laboratory, two heterozygous tall plants are crossed. If tall is dominant over short, what are the expected phenotypic results?
- A) 100% tall
B) 75% tall, 25% short
C) 50% tall, 50% short
D) 25% tall, 75% short
- 106) Mr. Jones has blood type A and Mrs. Jones has blood type AB. What is the probability that they will have a child with blood type A if both of Mr. Jones's parents were AB?
- A) 0%
B) 25%
C) 50%
D) 100%
- 107) Color blindness is a sex-linked recessive trait. A mother with normal color vision and a color blind father have a color blind daughter. Which of the following statements is correct?
- A) All of their daughters will be color blind.
B) The mother is a carrier of the color blindness gene.
C) All of their sons will have normal color vision.
D) All of their sons will be color blind.
- 108) In sickle cell anemia, the heterozygous condition results in resistance to malaria. If two heterozygous parents have a child, what are the chances of that child

Biology questions second batch

- being resistant to malaria but not having sickle cell anemia?
- A) 25%
 - B) 50%**
 - C) 75%
 - D) 100%
- 109) In guinea pigs, the allele for rough coat (R) is dominant to the allele for smooth coat (r). A rough coat male and a smooth coat female mate. They produce several litters, of which 50% are rough coat and 50% are smooth coat. What were the genotypes of the parents?
- A) RR × rr
 - B) Rr × rr**
 - C) RR × Rr
 - D) Rr × Rr
- 110) Which genotype is used in a test cross?
- A) Homozygous dominant
 - B) Heterozygous dominant
 - C) Homozygous recessive**
 - D) Heterozygous recessive
- 111) How would genetically altering crops for pest resistance be economically beneficial?
- A) Erosion of topsoil would no longer be a concern.
 - B) Crops would be more easily protected from weeds.
 - C) Crop-eating pests would not ruin crops.**
 - D) Abnormal plant growth would be eliminated.
- 112) Which of the following DNA
- A) Sequencing
 - B) Cloning**
 - C) Electrophoresis
 - D) Antibody production
- 113) After performing amniocentesis, which analysis is *most often* used to determine the chromosomal condition of a developing fetus?
- A) Blood type
 - B) DNA sequence
 - C) Genetic marker
 - D) Karyotype**
- 114) When viewing a karyotype to detect genetic disorders, which of the following would be a concern?
- A) Different chromosomes of different lengths
 - B) Two X chromosomes
 - C) Twenty-three pairs of chromosomes
 - D) Three chromosomes in any one set**
- 115) Albinism is a genetic mutation that results in some animals being born without the enzyme that produces the pigment for skin and eye color. Which of the following *best* explains this mutation?
- A) The DNA failed to replicate.
 - B) The deoxyribose sugar became separated from the DNA.
 - C) The genetic code change caused the wrong protein to form.
 - D) The RNA necessary to produce proteins was not present.**

Biology questions second batch

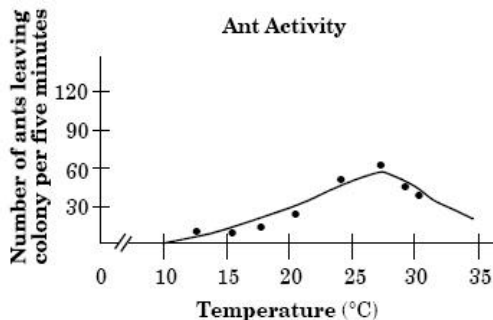
- 116) A student has cystic fibrosis, a genetic condition caused by the presence of a homozygous recessive gene. What could be her parent's genotypes for the cystic fibrosis trait?
- A) Her father is homozygous dominant; her mother is homozygous recessive.
 - B) Her father is heterozygous; her mother is homozygous dominant.
 - C) Her father is homozygous dominant; her mother is homozygous dominant.
 - D) Her father is heterozygous; her mother is homozygous recessive.
- 117) Biochemical analysis uses similarities in which of the following as evidence for evolutionary relationships?
- A) Amino acid sequence
 - B) Bone structure
 - C) Cellular architecture
 - D) Movement
- 118) The Galapagos finches are a group of closely related species of birds. Over time, specialized beaks have evolved for each species in response to mutations and competition for food and living space. This is an example of which of the following?
- A) Adaptive radiation
 - B) Coevolution
 - C) Convergent evolution
 - D) Vestigial structures
- 119) Which of the following is an example of natural selection in bacteria?
- A) genetic engineering
 - B) Binary fission
 - C) Antibiotic resistance
 - D) Nitrogen fixation
- 120) The snowshoe rabbit has white fur in winter and dark fur in summer. What is the *main* advantage of this fur color change to the rabbit?
- A) The dark fur keeps the rabbit from getting sunburned in summer.
 - B) The white fur absorbs more sunlight so the rabbit is warmer in winter.
 - C) The fur color makes the animal blend better with its environment so that a predator is not as likely to see it.
 - D) The white fur is more valuable to fur trappers, so the animal will be trapped and better fed in winter.

Biology questions second batch

121) Which of the following is the **most important** advantage of instincts?

- A) They reduce predator contacts.
- B) They improve food selection choices.
- C) They improve survival rates.
- D) They allow for smaller brains.

122) The graph below documents observations of an ant colony.



What conclusion can be drawn from the graph?

- A) Ant activity increases as temperature increases.
- B) Ant activity is greatest between 25°C and 30°C.
- C) Ant activity is greater in the evening than in the afternoon.
- D) Ant activity is probably related to light.

123) How is instinctive behavior acquired?

- A) Teaching
- B) Experience
- C) Reasoning
- D) Inheritance

124) Which of the following is true of innate behavior?

- A) Requires practice to develop
- B) Allows for adaptation and change
- C) May be influenced by reward
- D) Is genetically determined

125) Soybeans planted early in the spring flower at the same time as soybeans planted early in the summer due to which factor?

- A) Age of the plant
- B) Length of darkness
- C) Amount of moisture
- D) Amount of fertilizer

126) It has been observed that many bird species will defend a territory against certain other species. What is **most likely** true about those other species?

- A) Have same predators
- B) Eat same foods
- C) Have similar appearance
- D) Use similar courtship routines

127) Which of the following is an example of a circadian rhythm?

- A) Estivation of frogs
- B) Hibernation of squirrels
- C) Migration of birds
- D) Sleeping pattern of owls

128) In a population of walrus, a single male fathers most of the offspring. This is evidence that which of the following is occurring?

Biology questions second batch

- A) Courtship behavior
B) Dominance hierarchy
C) Female aggression
D) Migration
- 129) About 99% of the information in human DNA is shared by chimpanzee DNA. This is evidence of which of the following?
- A) As chimpanzees evolve, they will become more similar to humans.
B) Chimpanzees and humans are too different for meaningful genetic comparisons.
C) Chimpanzees and humans diverged from a common ancestor.
D) Humans evolved from chimpanzees.
- 130) What is the primary role of bacteria in the environment?
- A) Carbon dioxide fixation
B) Phosphorylation
C) Promotion of decay
D) Sulfurization
- 131) A scientist has encountered a new organism in the kingdom Animalia with the following characteristics: exoskeleton, sensory appendages, segmented body, and bilateral symmetry. In which phylum should this new organism be classified?
- A) Annelida
B) Arthropoda
C) Cnidaria
D) Molluska
- 132) According to cell theory, why are viruses not considered living organisms?
- A) Viruses cannot reproduce outside a living organism.
B) Viruses do not contain genetic material.
C) Viruses cannot cause diseases in other organisms.
D) Viruses do not contain organic compounds.
- 133) Which is the main advantage of the present system of scientific naming for classifying organisms?
- A) It clarifies the distinction between an animal and a plant.
B) Latin is not used for casual conversation, so it can be reserved for scientific names.
C) It avoids the confusion of the same species having different common names in different places.
D) If an organism has more than one name because of local customs, it can have more than one scientific name.
- 134) Which of the following groups includes organisms that are *most closely* related?
- A) Species
B) Genus
C) Family
D) Order

Biology questions second batch

135) Which behavior **most** distinguishes mammals and birds from other vertebrates?

- A) Methods of obtaining food
- B) Care of young after birth**
- C) Aggressive defensive behavior
- D) Construction of shelters

136) What is the function of male flower parts?

- A) To produce seeds
- B) To receive pollen**
- C) To release seeds
- D) To release pollen**

137) What regulates plant growth and development?

- A) Neurons
- B) Hormones**
- C) Stimulants
- D) Glands

138) **Principle:** Organisms produce organisms similar to themselves.

If a moth lays eggs that hatch into caterpillars, why is this **not** a violation of the principle stated above?

- A) Caterpillars are exceptions to the rule.
- B) Caterpillars and moths are related species.**
- C) Caterpillars are a stage of development.
- D) Caterpillars result from

mutations.

139) What is the primary benefit of honeybees to crop farmers?

- A) The honeybees provide fertilizer.
- B) The honeybees kill predators.**
- C) The honeybees destroy weeds.
- D) The honeybees pollinate crops.**

140) Which of the following would be **least likely** to be found in an arctic environment?

- A) Mammal
- B) Reptile**
- C) Bird
- D) Insect

141) Which phylum below includes organisms which undergo metamorphosis?

- A) Arthropoda**
- B) Annelida
- C) Mollusca
- D) Nematoda

142) Reptiles occupy a greater range of terrestrial environments than do amphibians. Which of the following adaptations allows for this increased range?

- A) The development of a protective coating on the egg**
- B) The ability to absorb oxygen through the skin
- C) The development of the two-chambered heart
- D) The use of external fertilization

143) What is the function of the endosperm tissue in seeds?

Biology questions second batch

- A) Food storage
- B) Photosynthesis
- C) Reproduction
- D) Water transport

144) A student carries out an experiment on the growth of *Rhizopus* (the common bread mold) in petri dishes observed under different temperatures.

Temp	Average Area Covered by Mold (cm ²)
-10°C	0
-5°C	0
0°C	2
5°C	8
10°C	15
15°C	27
20°C	41
25°C	50
30°C	32
35°C	19
40°C	10
45°C	4
50°C	0
55°C	0
60°C	0

Corn seedlings were grown under identical conditions. What factor could *best* account for differences in height among the seedlings?

- A) -10°C
- B) 20°C
- C) 25°C
- D) 60°C

145) Which of the following diseases is predetermined by a person's genetic makeup?

- A) Hemophilia
- B) Influenza
- C) Measles
- D) Tuberculosis

146) In which biome is this food web *most likely* to be found?

- A) Forest
- B) Desert
- C) Grassland
- D) Urban

147) What is the function of bacteria in this food web?

- A) Decomposers
- B) Producers
- C) Primary consumers
- D) Secondary consumers

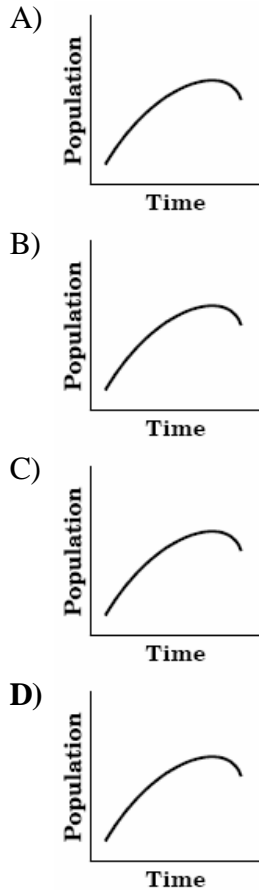
148) One bird species that feeds on large seeds nests in the same tree as a bird that feeds on small seeds. How are the birds able to coexist?

- A) They occupy different ecosystems.
- B) They occupy different niches.
- C) They occupy different communities.
- D) They occupy different habitats.

149) Harvested almost to extinction, a sea mammal received "endangered species" protection several years ago. Which graph *most accurately* represents its

Biology questions second batch

history and the desired outcome from protection?



150) Deer share the open plains with other grazing animals and predators. Which of the following would lead to a decrease in the deer population?

- A) A reduction in the predator

- B) An increase in the number of other grazing animals
 C) A reduction in the grazing animal population
 D) An increase in restrictions on the hunting of deer

151) What biome is known for its large herbivores, few trees, and fire-dependent ecology?

- A) Desert
 B) Grasslands
 C) Tropical rain forest
 D) Tundra

152) Which interaction *best* illustrates the concept of mutualism?

- A) Aphids feeding on rose leaves
 B) Nitrogen-fixing bacteria in root nodules of legumes
 C) Infectious bacteria living on the blood of a host
 D) Wolves and arctic foxes feeding on snowshoe rabbits

153) In the carbon cycle, carbon is transferred from animals to plants by which of the following?

- A) Carbon dioxide
 B) Oxygen
 C) Sugars
 D) Water

154) Which of the following statements about the nitrogen cycle is true?

- A) Although nitrogen is the most abundant atmospheric gas, plants cannot use it from the air.
 B) Adding man-made fertilizers to farm fields will take needed nitrogen from the cycle.

Biology questions second batch

- C) The occurrence of lightning takes extra nitrogen molecules from the atmosphere and the cycle.
- D) Bacteria located in the soil trap excess atmospheric oxygen and help it enter plant roots.
- 155) Which of the following is a sequence found in the nitrogen cycle?
- A) Nitrogen in the soil? air? plants? animals
- B) Nitrogen in the soil? animals? plants? fungi
- C) Nitrogen in the air? plants? animals? bacteria
- D) Nitrogen in the air? bacteria? plants? animals
- 156) If elements are to be recycled in nature, which organisms must be present?
- A) Decomposers
- B) Predators
- C) Herbivores
- D) Parasites
- 157) Producers are single and multicellular organisms, such as algae and flowering plants, that make their own food. How do these organisms produce their own food?
- A) They fix nitrogen from the atmosphere.
- B) They consume other producers.
- C) They exchange RNA with other organisms.
- D) They convert sunlight into chemical energy.
- 158) In general, which trophic level has the *most* energy available to it?
- A) Producer
- B) Primary consumer
- C) Secondary consumer
- D) Tertiary consumer
- 159) Which of the following is an example of ecological succession?
- A) Spring followed by summer
- B) Tadpole becoming a frog
- C) Meadow replacing a pond
- D) Predators eating prey
- 160) The correct order of stages in the primary succession of a dry land environment is illustrated by which of the following?
- A) Bare soil, shrubs, hardwoods, pines
- B) Shrubs, mosses, pines, grasses
- C) Rock, grasses, hardwoods, shrubs
- D) Rock, lichen, mosses, grasses
- 161) Why is biological control of pests considered to be better than chemical control?
- A) It is less expensive.
- B) It is more expensive.
- C) It will not kill beneficial organisms.
- D) It is easier to do.
- 162) An increase in pesticide use has resulted in a decrease in the local

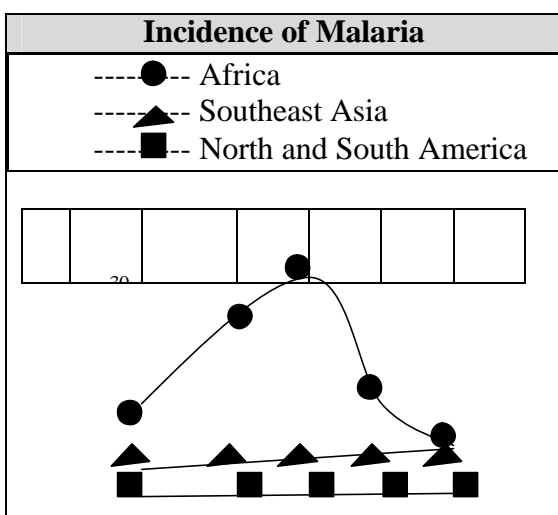
Biology questions second batch

bat population. Which of the following is the *best* explanation for the decreased bat population?

- A) Bat food supply decreased.
- B) Infection destroyed most of the bat population.
- C) Many bats moved into the area.
- D) Bat food supply increased.

163) The concentration of chemical food contaminants is higher in birds of prey than in many of the individual organisms that they eat. Which of the following statements *best* explains the reason for the higher concentration of food contaminants in birds of prey?

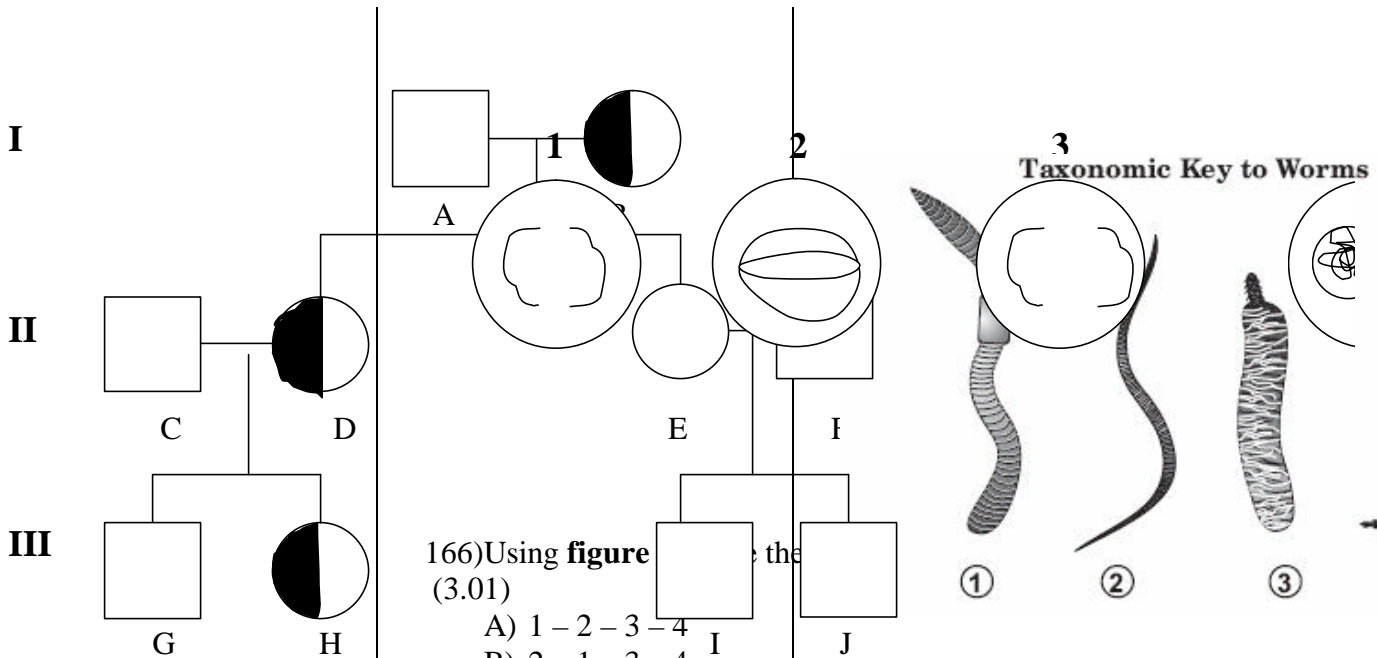
- A) Birds of prey store more of the food they eat.
- B) Birds of prey catch animals with chemical contaminants more easily.
- C) Only birds of prey store chemical contaminants.
- D) Chemical contaminants are stored and magnified in organisms higher up the food chain.



164) Use **figure 5** to answer the question. Based on the data in the graph, the incidence of malaria is most likely

- A) Declining in Africa
- B) Declining in Southeast Asia
- C) Increasing in Africa
- D) Increasing in Southeast Asia

Biology questions second batch



166) Using figure 2, the
 (3.01)
 A) 1 - 2 - 3 - 4
 B) 2 - 1 - 3 - 4
 C) 3 - 2 - 1 - 4
 D) 4 - 2 - 1 - 3

165) The pedigree in figure 2 shows hemophilia, which is found on the X chromosome. How does individual G not have the disease?
 (3.03)
 A) Individual G inherited a normal allele from Individual C and Individual D.
 B) Individual G inherited a normal allele from Individual C and Individual D.
 C) Individual G inherited a normal allele from Individual C and Individual D.
 D) Individual G inherited a normal allele from Individual A.

	Membrane Bound Organelle	Ribosomes	Chromosomal Structure	Size
A	+	+	12 chromosomes	unicellular
B	+	+	6 chromosomes	unicellular
C	+	+	body is long and round	unicellular
D	-	+	Ascaris	unicellular

167) Using the chart above, which is the best example of a prokaryote.
 (4.01)
 A) A
 B) B
 C) C
 D) D

1. a. worm has divided body parts (segmented)

 (Go to 3.)
 b. worm is not divided (unsegmented)

 2. a. worm has spine-covered head

 b. worm does not have spiny projections.

 3. a. worm does not have spines, has saddle-like portion

 b. no saddle portion, has spines

 *Nais*

168) Worm 2 belongs to which category?

Biology questions second batch

- A) *Acanthocephala*
- B) *Ascaris*
- C) *Lumbricus*
- D) *Nais***

Biology questions second batch

Answer Key:

1. C	45. C	91. D
2. B	46. A	92. B
3. D	47. A	93. D
4. C	48. B	94. D
5. C	49. C	95. C
6. C	50. C	96. C
7. A	51. D	97. D
8. C	52. C	98. B
9. A	53. B	99. C
10. C	54. B	100. A
11. A	55. B	101. D
12. C	56. D	102. B
13. D	57. C	103. A
14. C	58. D	104. A
15. C	59. D	105. B
16. B	60. B	106. C
17. D	61. B	107. B
18. A	62. D	108. B
19. C	63. C	109. B
20. C	64. A	110. C
21. D	65. C	111. C
22. B	66. C	112. B
23. A	67. B	113. D
24. D	68. C	114. D
25. D	69. A	115. C
26. A	70. D	116. D
27. B	71. B	117. A
28. B	72. C	118. A
29. A	73. B	119. C
30. A	74. OMIT	120. C
31. C	75. C	121. C
32. B	76. D	122. B
33. C	77. A	123. D
34. B	78. C	124. D
35. B	79. B	125. B
36. B	80. C	126. B
37. A	81. D	127. D
38. A	82. B	128. B
39. B	83. C	129. C
40. C	84. C	130. C
41. C	85. A	131. B
42. C	86. B	132. A
43. C	87. C	133. C
44. D	88. A	134. A
	89. A	135. B
	90. C	136. D

Biology questions second batch

- 137. B
- 138. C
- 139. D
- 140. B
- 141. A
- 142. A
- 143. A
- 144. OMIT
- 145. A
- 146. B
- 147. A
- 148. B
- 149. D
- 150. B
- 151. B
- 152. B
- 153. A
- 154. A
- 155. D
- 156. A
- 157. D
- 158. A
- 159. C
- 160. D
- 161. C
- 162. A
- 163. D
- 164. A
- 165. B
- 166. A
- 167. D
- 168. D