

BIOLOGY

1. BIOLOGY

Toss Up: Short Answer

Which of the following are classified as Type III hypersensitivity? (Note more than one answer may apply.)

- I. Systemic Lupus Erythematosus
- II. Farmer's lung
- III. Erythroblastosis fetalis
- IV. Glomerulonephritis

Bonus Answer: I, II, and IV

Accept: Systemic Lupus Erythematosus, Erythroblastosis fetalis, Glomerulonephritis

Bonus: Multiple Choice

Erythroblastosis fetalis can kill the baby in any pregnancy of the mother but the first. This fatal condition occurs when

- W) The mother is Rh(-) and the fetus from her first pregnancy is Rh(-)
- X) The mother is Rh(-) and the fetus from her first pregnancy is Rh(+)
- Y) The mother is Rh(+) and the fetus from her first pregnancy is Rh(-)
- Z) The mother is Rh(+) and the fetus from her first pregnancy is Rh(+)

Bonus Answer: X

2. BIOLOGY

Toss Up: Multiple Choice

Which of the following is a bacteriostatic antibiotic that works by disrupting protein synthesis?

- W) Erythromycin
- X) Penicillin
- Y) Trimethoprim
- Z) Nalidixic acid

Toss Up Answer: W

Bonus: Multiple Choice

In India, during a cholera epidemic of 1926, European men poured a treatment for cholera into village wells unbeknownst to the villagers. What was the treatment?

- W) Alcohol
- X) antibiotics
- Y) Phages
- Z) Iodine

Bonus Answer: Y

3. BIOLOGY

Toss Up: Multiple Choice

One day you see the headline on a tabloid and it says: "BACTERIA ARE EATING MY FACE." The species of bacteria that most commonly causes the condition (necrotizing fasciitis) sensationalized above is:

- W) Staphylococcus aureus
- X) Streptococcus agalactiae
- Y) Staphylococcus epidermis
- Z) Streptococcus pyogenes

Toss Up Answer: Z

Bonus: Short Answer

Staphylococcus aureus produces many enzymes that contribute to its virulence. It produces an enzyme that breaks down an acid crucial to the structural integrity of tissues. This acid is:

Bonus Answer: Hyaluronic acid (accept: Hyaluronic)

4. BIOLOGY**Toss Up: Multiple Choice**

Stabilization of the unique coiled structure of an alpha helix in a protein is primarily attributed to:

- W) disulfide bridges between cysteine side chains
- X) carbohydrate moieties attached to polar amino acids
- Y) peptide linkages that covalently bond amino acids
- Z) an abundance of amino acids with electrically charged side chains

Toss Up Answer: Z

Bonus: Multiple Choice

Histidine is degraded to α -ketoglutarate and is described as a:

- W) gluco amino acid
- X) glucogenic amino acid
- Y) ketogenic amino acid
- Z) keto-gluco amino acid

Bonus Answer: X

5. BIOLOGY**Toss Up: Multiple Choice**

A person with phenylketonuria cannot convert:

- W) phenylalanine to tyrosine
- X) phenylalanine to isoleucine
- Y) phenol into ketones
- Z) phenylalanine to lysine

Toss Up Answer: W

Bonus: Short Answer

In the normal breakdown of phenylalanine, it is initially degraded to:

Bonus Answer: Tyrosine

6. BIOLOGY**Toss Up: Multiple Choice**

The phospholipids present in cytoplasm membrane of the archaeo-bacteria is:

- W) phosphoglycerides
- X) polyisoprenoid
- Y) polyisoprenoid branched chain lipids
- Z) none of the above

Toss Up Answer: Y

Bonus: Multiple Choice

The phospholipids present in cytoplasm membrane of eubacteria is mainly:

- W) phosphoglycerides
- X) polyisoprenoid
- Y) phospholipoprotein
- Z) none of these

Bonus Answer: W

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7. BIOLOGY

Toss Up: Multiple Choice

Which were the investigators lived at the same time?

- W) Koch and Pasteur
- X) Darwin and Woese
- Y) Van Leeuwenhoek and Ricketts
- Z) Berg and Hooke

Toss Up Answer: W

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Bonus: Short Answer

The third founder of microbiology, Ferdinand Cohn, classified bacteria by shape. This system is still used today. Name three shapes of bacteria.

Bonus Answer: Three of these: sphericals, short rods [rod], threads, and spirals

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8. BIOLOGY

Toss Up: Short Answer

What is considered the most unifying concept in biology?

Bonus Answer: Evolution

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Bonus: Multiple Choice

You capture a Pikachu and make it hold a Light Ball. You breed this Pikachu and the resulting Pokemon inherits the move Volt Tackle. This phenomenon of inheriting traits due to the actions of individuals reflects what theory:

- W) Darwinian Natural Selection
- X) Lamarckian Inheritance
- Y) Oak-azaki Fragments
- Z) Parental Mimicry

Bonus Answer: X

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9. BIOLOGY

Toss Up: Multiple Choice

Which of the following is true regarding anthrax:

- W) Anthrax is caused by a virus
- X) Anthrax is highly contagious
- Y) Inhalation anthrax and cutaneous anthrax are caused by separate strains of *Bacillus anthracis*
- Z) Inhalation Anthrax requires infection with a large number of spores

Toss Up Answer: Z

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Bonus: Short Answer

Give the binomial nomenclature of the pathogen that causes anthrax:

Bonus Answer: *Bacillus anthracis*

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10. BIOLOGY

Toss Up: Multiple Choice

Pine, fir, spruce, cedar, larch and cypress are the famous timber-yielding plants. All these belong to:

- W) angiosperms
- X) gymnosperms
- Y) monocotyledons
- Z) dicotyledons

Toss Up Answer: X

Bonus: Multiple Choice

The population of algae in soil is [blank] that of either bacteria or fungi.

- W) generally smaller than
- X) generally greater than
- Y) equal to
- Z) none of these

Bonus Answer: W

11. BIOLOGY

Toss Up: Short Answer

Nitrogen fixation refers to the direct conversion of atmospheric nitrogen gas into:

Bonus Answer: ammonia

Bonus: Short Answer

The transformation of nitrates to gaseous nitrogen is accomplished by microorganisms in a series of biochemical reactions. The process is known as:

Bonus Answer: denitrification

12. BIOLOGY

Toss Up: Short Answer

Nitrogenous base that occurs in RNA but not in DNA?

Bonus Answer: Uracil

Bonus: Short Answer

Which of the following correctly explains how a favorable genetic trait can increase in frequency in a population?

Bonus Answer: Natural Selection

13. BIOLOGY

Toss Up: Multiple Choice

Which of the following correctly states the composition of blood?

- W) 45 % RBC, 55% Plasma
- X) 65 % RBC, 25% Plasma
- Y) 85 % RBC, 15% Plasma
- Z) 35% RBC, 65% Plasma

Toss Up Answer: W

Bonus: Multiple Choice

What is the function of basophils?

- W) to engulf pathogens through phagocytosis
- X) to stimulate inflammation by releasing histamine
- Y) to kill RBCs
- Z) to remove pathogens from RBCs

Bonus Answer: X

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14. BIOLOGY

Toss Up: Multiple Choice

Which gland releases the antidiuretic hormone?

- W) pituitary
- X) hypothalamus
- Y) pancreas
- Z) testes

Toss Up Answer: X

Bonus: Multiple Choice

Which part of the heart functions as a pacemaker?

- W) AV node
- X) S node
- Y) SA node
- Z) SA pacemaker

Bonus Answer: Y

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15. BIOLOGY

Toss Up: Multiple Choice

Which of the following is the most common organic compound on Earth?

- W) chitin
- X) glucose
- Y) phospholipids
- Z) cellulose

Toss Up Answer: Z

Bonus: Multiple Choice

Which of the following syndrome occurs in women born with only 1 X chromosome?

- W) Marfan Syndrome
- X) Turner Syndrome
- Y) Prader-Willi syndrome
- Z) Porphyria

Bonus Answer: X

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16. BIOLOGY

Toss Up: Multiple Choice

Which of the following conditions causes an autoimmune response to eating glucose?

- W) Anaplasmosis

- X) Anisakiasis
- Y) celiac disease
- Z) Candidiasis

Toss Up Answer: Y

Bonus: Multiple Choice

What is colony collapse disorder characterized by?

- W) The disappearance of many male worker bees
- X) The death of the queen bee
- Y) The destruction of the honey produced by bees
- Z) The destruction of the structure of a bee hive

Bonus Answer: W

17. BIOLOGY

Toss Up: Multiple Choice

Which of the following is not an anabolic steroid?

- W) Fenestrane
- X) Stanozolol
- Y) Fortesta
- Z) Deca-Durabolin

Toss Up Answer: W

Bonus: Short Answer

Which scientist became known as the founder of molecular biology due to their discovery of the spiral structure of proteins?

Bonus Answer: Linus Pauling

18. BIOLOGY

Toss Up: Short Answer

What family are fruit flies apart of?

Bonus Answer: Drosophilidae

Bonus: Short Answer

Which species of animals are the most abundant on Earth?

Bonus Answer: nematodes

19. BIOLOGY

Toss Up: Short Answer

What is the most abundant element in the human body?

Bonus Answer: Oxygen

Bonus: Short Answer

What is the function of the alveoli?

Bonus Answer: to allow oxygen and carbon dioxide to move between the lungs and bloodstream

20. BIOLOGY

Toss Up: Multiple Choice

Which of the following most closely approximates the number of

protein-coding genes in the human genome?

W) 10,000

X) 20,000

Y) 50,000

Z) 100,000

Toss Up Answer: X

Bonus: Short Answer

Arrange the following to depict the conduction pathway in the

vertebrate heart: 1) atrioventricular node, 2) right and left bundle branches, 3) sinoatrial node, 4) Bundle of His, 5) Purkinje fibers.

Bonus Answer: 3) SINOATRIAL NODE

1) ATRIOVENTRICULAR NODE

4) BUNDLE OF HIS

2) RIGHT AND LEFT BUNDLE BRANCHES

5) PURKINJE FIBERS

21. BIOLOGY

Toss Up: Short Answer

What is the phenomenon that describes the pupil continuously adjusting to different ambient light levels?

Bonus Answer: Pupillary Light Reflex

Bonus: Short Answer

How large, in degrees, is the visual field for the right eye?

Bonus Answer: 150

22. BIOLOGY

Toss Up: Short Answer

What is the G Protein Coupled Receptor for the G protein transducin?

Bonus Answer: Rhodopsin

Bonus: Short Answer

The phototransduction pathway controlled by light striking rhodopsin ultimately affects a sodium channel. What is the second messenger that controls the channel? Be sure to give your answer as "cyclic _ _ _ (Read as: "the word cyclic followed by a three letter acronym)".

Bonus Answer: cGMP (accept: cyclic guanosine monophosphate)

23. BIOLOGY

Toss Up: Multiple Choice

If I cut your left optic tract, what part of your visual field will you lose?

W) The left temporal section only

X) The left temporal and left nasal sections

Y) The right nasal section only

Z) The right temporal and right nasal sections

Toss Up Answer: Z

Bonus: Short Answer

What is the name of the spot where the left optic tract and the right optic tract intersect?

Bonus Answer: optic chiasm

24. BIOLOGY

Toss Up: Multiple Choice

Hair cells in the ear form synapses on spiral ganglion cells. These spiral ganglion cells join what nerve that projects to the medulla?

- W) VI
- X) VIII
- Y) X
- Z) XII

Toss Up Answer: X

Bonus: Short Answer

What are these hair cells, which have a mechanically gated TRPA1 channel, called?

Bonus Answer: Stereocilia

25. BIOLOGY

Toss Up: Multiple Choice

Chitons, a type of mollusk, have oval-shaped bodies and a shell composed of how many dorsal plates?

- W) 6
- X) 7
- Y) 8
- Z) 9

Toss Up Answer: Y

Bonus: Short Answer

Gastropods undergo a distinct developmental process, which causes their visceral mass to rotate 180 degrees, and as a consequence its anus ends up above its head. What is this process called?

Bonus Answer: torsion

26. BIOLOGY

Toss Up: Short Answer

Certain proteins are released by virus-infected cells which induce neighboring cells to produce substances that will inhibit viral replication. What are these proteins called?

Bonus Answer: Interferons

Bonus: Short Answer

What is the process by which antibodies cover a pathogen such that it is marked for destruction and forms a precipitate to be flushed out?

Bonus Answer: Opsonization

27. BIOLOGY

Toss Up: Multiple Choice

Which of the following types of antibodies is typically used to fight parasitic infections?

- W) E
- X) M
- Y) G
- Z) A

Toss Up Answer: W

Bonus: Short Answer

The immune response can include complement protein cascades, which form pores in the membrane of the target

cell. The cell then swells and lyses due to water and ions rushing in. The type of complex that forms the pore in the membrane is called?

Bonus Answer: membrane attack (accept: membrane attack complex)

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28. BIOLOGY

Toss Up: Short Answer

HIV can be treated with a drug cocktail known as HAART. What does HAART stand for?

Bonus Answer: Highly Active Anti-Retroviral Treatment

Bonus: Short Answer

AIDS patients may become afflicted with an extremely rare cancer caused by a certain herpesvirus. What is this cancer called?

Bonus Answer: Kaposi's Sarcoma

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29. BIOLOGY

Toss Up: Short Answer

In 1999, scientists discovered a fossil in China of what appeared to be an early chordate. This chordate had eyes and a brain but no skull, a derived feature of craniates. What was this fossil called?

Bonus Answer: Haikouella

Bonus: Short Answer

What is the class of the most basal group of craniates?

Bonus Answer: Myxini (accept: Hagfishes)

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30. BIOLOGY

Toss Up: Short Answer

The phenomenon where bacteria monitor the presence of secreted signaling molecules to determine the local density of cells is called?

Bonus Answer: Quorum sensing

Bonus: Short Answer

Quorum sensing allows bacteria to coordinate their behaviors in synchrony. One example of said behavior is illustrated when you find them on your teeth when you wake up. What has formed on your teeth?

Bonus Answer: biofilm

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31. BIOLOGY

Toss Up: Short Answer

Which three amino acids can most often be phosphorylated in eukaryotes?

Bonus Answer: Serine, Threonine, Tyrosine

Bonus: Short Answer

After transforming the *Ku11* gene into XL10 Gold *E. coli* and growing the bacteria for a day in selective media in the 25°C incubator, you notice that the colonies are much smaller than they should be. Why did this happen?

Bonus Answer: 37°C is the optimal temperature for growing *E. coli*. The colonies were smaller because they grew more slowly.

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32. BIOLOGY

Toss Up: Multiple Choice

Natural selection is effective in the evolutionary process because it:

W) causes evolution

- X) changes allele frequencies
- Y) increases the mean fitness of a population
- Z) leads to fixation or loss of particular alleles

Toss Up Answer: Y

Bonus: Short Answer

You tie a ribbon to a tree trunk. The height measured from the ribbon to the ground is five feet. The tree grows at a rate of three feet per year. After 10 years, how far up from the ground will the ribbon be?

Bonus Answer: Five feet. The elongation of a tree trunk occurs from the apical meristem up.

33. BIOLOGY

Toss Up: Multiple Choice

If a gene is fixed in a population:

- W) the gene cannot undergo mutation
- X) one allele exhibits complete dominance over the other allele of that gene
- Y) only one allele appears for that gene in the population
- Z) the gene is incapable of recombination

Toss Up Answer: Y

Bonus: Multiple Choice

The Species-Area Relationship suggests that 10% of a given area supports:

- W) 90% of species
- X) 70% of species
- Y) 50% of species
- Z) 30% of species

Bonus Answer: Y

34. BIOLOGY

Toss Up: Short Answer

You perform a transformation and calculate a viable count of 9000 cells/mL. If your transformation efficiency was 10%, how many colonies would you expect to see if you plate 100uL of cells onto selective media?

Bonus Answer: 90

Bonus: Short Answer

If the mother of a child suffers from diabetes mellitus and deafness (DAD) and the father does not, what is the likelihood that the child will develop degenerative optomosis?

*Note: Diabetes mellitus and deafness (DAD) is a genetic disorder, not separate ailments.

Bonus Answer: 100%. DAD is caused by mutations in mtDNA, which are passed on only by the mother.

35. BIOLOGY

Toss Up: Multiple Choice

The initial frequency of allele A is 0.6, and the initial frequency of allele a is 0.4. In the next generation, the frequencies for alleles change to 0.61 and 0.39, respectively for each allele. The change in allele frequency is:

- W) the result of random mating
- X) evolution
- Y) the result of natural selection
- Z) impossible in a small population

Toss Up Answer: X

Bonus: Multiple Choice

What is the main structure that connects the left and right hemispheres of the brain?

- W) corpus callosum
- X) thalamus
- Y) superior colliculus
- Z) amygdala

Bonus Answer: W

36. BIOLOGY

Toss Up: Multiple Choice

Mutation in which of the following types of genes is least likely to result in higher chances of developing cancer?

- W) oncogene
- X) tumor suppressor gene
- Y) proto-oncogene
- Z) tumor necrosis factor gene

Toss Up Answer: Z

Bonus: Short Answer

Rearrange the following list of the structures of a nephron in the order in which filtrate flows through them:

1. proximal convoluted tubule
2. ascending limb of Loop of Henle
3. distal convoluted tubule
4. collecting duct
5. Bowman's capsule
6. descending limb of Loop of Henle

Bonus Answer: 5, 1, 6, 2, 3, 4

***A list of the structures or the correct reordering of the numbers assigned to each structure are valid answers**

37. BIOLOGY

Toss Up: Short Answer

Which process is complementary to hydrolysis?

Bonus Answer: Dehydration synthesis

Bonus: Multiple Choice

Which of the following inhibits carbonic anhydrase?

- W) Erythromycin
- X) Imipramine
- Y) Acetazolamide
- Z) Ambylmycin

Bonus Answer: Y

38. BIOLOGY

Toss Up: Short Answer

Haemoglobin alpha and beta globin chains are found in what 2 chromosomes?

Bonus Answer: Alpha: Chromosome 16

Beta: Chromosome 11

Bonus: Short Answer

Name all types of RNA

Bonus Answer: mRNA, tRNA, rRNA

39. BIOLOGY

Toss Up: Short Answer

In which end of DNA is the hydroxyl group found?

Bonus Answer: 3 prime

Bonus: Multiple Choice

Which of the following are types of non-essential amino acids?

W) Phenylalanine and Valine

X) Leucine and Histidine

Y) Histidine and Lysine

Z) Arginine and Tyrosine

Bonus Answer: Z

40. BIOLOGY

Toss Up: Short Answer

In DNA replication, the lagging strand is replicated in what fragments?

Bonus Answer: Okazaki

Bonus: Short Answer

Sickle-cell anemia is caused by what type of mutation?

Bonus Answer: Point mutation/deletion

41. BIOLOGY

Toss Up: Short Answer

Where was GFP originally isolated?

Bonus Answer: Jellyfish

Bonus: Multiple Choice

In which of the following organisms was the gene originally expressed in?

W) C. elegans

X) Salmonella

Y) E. coli

Z) Petromyzon

Bonus Answer: W

42. BIOLOGY

Toss Up: Short Answer

What is the smallest and simplest amino acid called?

Bonus Answer: Glycine, GLY

Bonus: Short Answer

What is the R group of the amino acid glycine?

Bonus Answer: a single hydrogen

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43. BIOLOGY

Toss Up: Multiple Choice

Tetrachromacy is the condition of possessing how many types of cone cells?

W) 1

X) 2

Y) 3

Z) 4

Toss Up Answer: Z

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Bonus: Short Answer

The lens of the human eye blocks out ultraviolet light, which in turn prevents us from seeing UV light directly. What is the absence of the lens of the eye called?

Bonus Answer: Aphakia

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44. BIOLOGY

Toss Up: Multiple Choice

How many sections does the small intestine consist of?

W) 2

X) 3

Y) 4

Z) 5

Toss Up Answer: X

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Bonus: Short Answer

What are the names of the three sections of the small intestine?

Bonus Answer: Duodenum, Jejunum, Ileum

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45. BIOLOGY

Toss Up: Short Answer

Where is the smallest bone in your body located?

Bonus Answer: Ear

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Bonus: Short Answer

What is the name of the smallest bone in the human body

Bonus Answer: Stapes, Stirrup

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46. BIOLOGY

Toss Up: Short Answer

Which two scientists are credited with the discovery of the double helix of DNA?

Bonus Answer: James Watson and Francis Crick, Watson and Crick

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Bonus: Short Answer

Which scientist incorrectly proposed the triple DNA helix model, with the nitrogenous bases pointing outwards and the phosphate forming the core?

Bonus Answer: Linus Pauling, Paulingb

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47. BIOLOGY

Toss Up: Multiple Choice

Isolated RNA molecules are generally less stable than DNA at physiological pH because:

- W) RNA has ribose
- X) RNA is always linear
- Y) RNA uses uracil instead of thymine
- Z) RNA is usually single-stranded

Toss Up Answer: W

Bonus: Multiple Choice

What is the half-life of DNA?

- W) 673 years
- X) 100 years
- Y) 272 years
- Z) 521 years

Bonus Answer: Z

48. BIOLOGY

Toss Up: Short Answer

A population of 2800 flowers is in Hardy-Weinberg equilibrium, and 2352 of them are red in color. The red allele R is dominant; the white allele r is recessive. What is the frequency of heterozygotes in the population?

Bonus Answer: 48%, or any equivalent form

Bonus: Multiple Choice

Which of the following would be least damaged by a lipase?

- W) endoplasmic reticulum
- X) mitochondria
- Y) ribosome
- Z) nuclei

Bonus Answer: Y

49. BIOLOGY

Toss Up: Multiple Choice

What is the cause of trisomy 21?

- W) error during meiosis
- X) error during mitosis
- Y) over duplication of chromosome 21
- Z) chromosomal insertion

Toss Up Answer: W

Bonus: Multiple Choice

Why is pepsinogen secreted as a zymogen into the stomach?

- W) to change the pH of the stomach fluids to aid digestion.
- X) to prevent digestion of the gastric glands
- Y) to inactivate pepsinogen
- Z) to digest complex carbohydrates

Bonus Answer: X

50. BIOLOGY

Toss Up: Multiple Choice

How does atropine counter the effects of nerve gas?

W) Atropine binds to the nerve gas and inactivates it

X) Atropine inactivates acetylcholinesterase and allows more acetylcholine to cross the synaptic cleft

Y) atropine blocks the acetylcholine receptor which blocks the excess acetylcholine lingering in the synaptic cleft

Z) atropine stimulates the production of an enzyme that breaks down the nerve gas

Toss Up Answer: Y

Bonus: Short Answer

In order to flower, what does a short-day plant need?

Bonus Answer: Night that is longer than a certain critical length

51. BIOLOGY

Toss Up: Short Answer

What is it called when a species of animal becomes two separate species while inhabiting the same area?

Bonus Answer: Sympatric speciation

Bonus: Multiple Choice

Cladograms are used to determine?

W) Taxonomy

X) Geographic Distribution

Y) Genotype

Z) Evolutionary relatedness

Bonus Answer: Z

52. BIOLOGY

Toss Up: Short Answer

What substance protects the stomach from consuming itself?

Bonus Answer: Mucus

Bonus: Multiple Choice

In which organs is thrombopoietin produced?

W) Heart and Liver

X) Liver and Kidney

Y) Kidney and Pancreas

Z) Pancreas and Liver

Bonus Answer: X

53. BIOLOGY

Toss Up: Short Answer

Which glial cells secrete cerebrospinal fluid?

Bonus Answer: Ependymal cells

Bonus: Short Answer

Oxygen attaches to hemoglobin to form oxyhemoglobin. What is the resultant molecule called when carbon dioxide attaches to hemoglobin?

Bonus Answer: Carbaminohemoglobin

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54. BIOLOGY

Toss Up: Short Answer

What organelle does the cisternal maturation model describe?

Bonus Answer: Golgi apparatus; Golgi complex

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Bonus: Short Answer

What is the part on the retina where cones are tightly packed and creates a small depression?

Bonus Answer: Fovea; Fovea centralis

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55. BIOLOGY

Toss Up: Short Answer

What functional group normally allows the cell to differentiate old and new DNA strands in prokaryotes?

Bonus Answer: Methyl group; -CH₃

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Bonus: Short Answer

What is it called when the hematocrit rises above normal levels?

Bonus Answer: hypercythemia; erythrocythemia; hypererythrocythemia

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56. BIOLOGY

Toss Up: Short Answer

What hormone released by juxtaglomerular cells of the kidney regulates blood pressure and filtration rate?

Bonus Answer: Renin

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Bonus: Short Answer

What types of exocrine glands bud their secretions off along with a small portion of the cell itself?

Bonus Answer: Apocrine glands

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57. BIOLOGY

Toss Up: Short Answer

What types of cells in the stomach are pepsins produced from?

Bonus Answer: Chief cells

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Bonus: Short Answer

What factor of the blood clotting cascade converts prothrombin into active thrombin?

Bonus Answer: Factor III; Tissue Factor; Thromboplastin

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58. BIOLOGY

Toss Up: Multiple Choice

Which of the following is a retrovirus?

W) HIV

X) Hepatitis B virus

Y) Poliovirus

Z) Influenza A virus

Toss Up Answer: W

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Bonus: Short Answer

Where do DNA viruses usually replicate?

Bonus Answer: In the nucleus.

59. BIOLOGY

Toss Up: Multiple Choice

Which of the following is present in plant cells but not animal cells?

- W) Nuclei
- X) Plasmodesmata
- Y) Mitochondria
- Z) Vacuoles

Toss Up Answer: X

Bonus: Short Answer

What is the name of the theory that explains the existence of mitochondria (and why they have their own DNA)?

Bonus Answer: Endosymbiotic Theory

60. BIOLOGY

Toss Up: Multiple Choice

What transmissible agent causes Mad Cow Disease (BSE)?

- W) Viron
- X) Virus
- Y) Bacteria
- Z) Prion

Toss Up Answer: Z

Bonus: Multiple Choice

Which of the following are prions made up of?

- W) Proteins, only
- X) Nucleic Acids, only
- Y) Proteins and Nucleic Acids, only
- Z) Proteins and Carbohydrates, only

Bonus Answer: W

61. BIOLOGY

Toss Up: Multiple Choice

Exocytotic vesicles are most frequently exported via the

- W) endoplasmic reticulum
- X) the nuclear envelope
- Y) the trans Golgi
- Z) the cis Golgi

Toss Up Answer: Y

Bonus: Multiple Choice

Endosomes formed as a result of receptor-mediated endocytosis are most frequently coated with which type of proteins?

- W) G proteins
- X) clathrins
- Y) pseudopodium
- Z) microtubules

Bonus Answer: X

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62. BIOLOGY

Toss Up: Short Answer

Name all of the following that are amphipathic: integral proteins, cholesterol, phospholipids, triacylglycerol, mannose

Bonus Answer: integral proteins and phospholipids

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Bonus: Multiple Choice

Which of the following is not true about a part of the phospholipid?

- W) They contain two fatty acid chains.
- X) Their heads contain a net charge.
- Y) They have a phosphate group in their heads.
- Z) They have a choline group in their heads.

Bonus Answer: X

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63. BIOLOGY

Toss Up: Multiple Choice

Cellulose and glycogen differ in

- W) their alpha/beta glucose configurations
- X) branching
- Y) their ability to be metabolized
- Z) all of the above

Toss Up Answer: Z

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Bonus: Short Answer

N-Acetylglucosamine is the monomer of which common polysaccharide?

Bonus Answer: Chitin

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64. BIOLOGY

Toss Up: Multiple Choice

Which of the following intermolecular interactions is not exclusive to a single polypeptide's tertiary structure?

- W) hydrophobic interactions
- X) polar interactions
- Y) hydrogen bonding
- Z) disulfide bridges

Toss Up Answer: Y

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Bonus: Short Answer

Polypeptide folding is aided by which type of cavity-structured proteins?

Bonus Answer: Chaperonins

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65. BIOLOGY

Toss Up: Multiple Choice

Neurotransmitters are received by which kinds of receptors?

- W) G protein coupled receptors
- X) receptor tyrosine kinases
- Y) ion gated channels
- Z) intracellular receptors

Toss Up Answer: Y

Bonus: Multiple Choice

Which of the following is the immediate effect of a signal molecule binding to a receptor tyrosine kinase molecule?

- W) It forms a dimer with another receptor tyrosine kinase.
- X) It initiates a phosphorylation cascade.
- Y) It becomes activated with phosphate groups.
- Z) It attaches to a scaffolding protein.

Bonus Answer: W

66. BIOLOGY

Toss Up: Multiple Choice

Of the following, which is a second messenger used in cell signaling?

- W) G protein
- X) Protein kinase A
- Y) adenylyl cyclase
- Z) cAMP

Toss Up Answer: Z

Bonus: Short Answer

Adjacent plant cells most commonly communicate via what intercellular junction?

Bonus Answer: Plasmodesmata (ACCEPT: desmotubule)

67. BIOLOGY

Toss Up: Multiple Choice

Introns are hydrolyzed and removed from pre-mRNA by

- W) exons
- X) spliceosomes
- Y) small nuclear ribonucleoproteins
- Z) nucleotide-pair substitution

Toss Up Answer: X

Bonus: Short Answer

Okazaki fragments on the lagging strand of DNA are joined by which protein?

Bonus Answer: DNA ligase (ACCEPT: ligase)

68. BIOLOGY

Toss Up: Multiple Choice

Which of the following is a storage protein?

- W) aquaporin
- X) actin
- Y) ovalbumin
- Z) AP2

Toss Up Answer: Y

Bonus: Short Answer

Which of the following amino acids has a sulfhydryl group in its side chain?

Bonus Answer: cysteine

69. BIOLOGY

Toss Up: Multiple Choice

Which of the following statements concerning photosynthetic light reactions is false?

- W) Photosystem I contains the P700 reaction center.
- X) The electron transport chain following photosystem I drives chemiosmosis.
- Y) NADPH is the final electron acceptor.
- Z) Electrons are replenished in photosystem II by the splitting of water.

Toss Up Answer: X

Bonus: Multiple Choice

Which of the following molecules is not present in the electron transport chain immediately following photosystem II?

- W) cytochrome complex
- X) plastoquinone
- Y) ferredoxin
- Z) plastocyanin

Bonus Answer: Y

70. BIOLOGY

Toss Up: Multiple Choice

Which of the following hormones does not promote, directly or indirectly, spermatogenesis?

- W) prostaglandins
- X) luteinizing hormone
- Y) follicle stimulating hormone
- Z) gonadotropin releasing hormone

Toss Up Answer: W

Bonus: Multiple Choice

Which hormone is synthesized in the hypothalamus and released via the anterior pituitary gland?

- W) prolactin
- X) thyroid-stimulating hormone
- Y) adrenocorticotrophic hormone
- Z) oxytocin

Bonus Answer: Z

71. BIOLOGY

Toss Up: Short Answer

What type of immune cell is involved in humoral immunity?

Bonus Answer: B cells

Bonus: Short Answer

What is the most common type of immunoglobulin?

Bonus Answer: Immunoglobulin G

72. BIOLOGY

Toss Up: Short Answer

What is the powerhouse of the cell?

Bonus Answer: Mitochondria!!!

Bonus: Short Answer

What do you use to see?

Bonus Answer: Eyes

73. BIOLOGY

Toss Up: Short Answer

What are the 5 senses?

Bonus Answer: Taste smell sight hearing touch

Bonus: Short Answer

What is an important component to "taste"?

Bonus Answer: Smell!

74. BIOLOGY

Toss Up: Short Answer

What is the material that makes up part of your nose and ears?

Bonus Answer: Cartilage

Bonus: Short Answer

How does one acquire an infection of the ear?

Bonus Answer: By a virus or bacteria

75. BIOLOGY

Toss Up: Short Answer

What hormone regulates sleep cycles?

Bonus Answer: Melatonin

Bonus: Short Answer

What blood type is considered the universal donor?

Bonus Answer: O-, O-neg, O-negative

76. BIOLOGY

Toss Up: Multiple Choice

What is a technique for studying cell membrane structure and function?

W) cell fractionation

X) freeze fracture

Y) cell centrifugation

Z) inserting radioactive substances

Toss Up Answer: X

Bonus: Short Answer

Which type of microscope is useful for studying the internal structure of cells?

Bonus Answer: transmission electron microscope

77. BIOLOGY

Toss Up: Multiple Choice

Which is not a part of the nucleus?

- W) nuclear envelope
- X) nucleolus
- Y) chromatin
- Z) plasmodesmata

Toss Up Answer: Z

Bonus: Multiple Choice

Which is not a part of the cytoskeleton?

- W) microfilaments
- X) intermediate filaments
- Y) microtubules
- Z) gap junctions

Bonus Answer: Z

78. BIOLOGY

Toss Up: Short Answer

The enzyme catalase is associated with which cell organelle?

Bonus Answer: Peroxisome

Bonus: Short Answer

What dangerous product of fatty acid oxidation does catalase act on?

Bonus Answer: Hydrogen peroxide

79. BIOLOGY

Toss Up: Multiple Choice

What structure in plant cells is similar to gap junctions in animal cells?

- W) Cell wall
- X) Central Vacuole
- Y) Plasmodesmata
- Z) Thylakoid

Toss Up Answer: Y

Bonus: Multiple Choice

If, on average, 46% of the loci in a species' gene pool are heterozygous, then the average homozygosity of the species should be

- W) 23%
- X) 46%
- Y) 54%
- Z) There is not enough information to say.

Bonus Answer: Y

80. BIOLOGY

Toss Up: Multiple Choice

A trend toward the decrease in the size of plants on the slopes of mountains as altitudes increase is an example of

- W) a cline

X) a bottleneck
Y) relative fitness
Z) geographic variation
Toss Up Answer: W

Bonus: Short Answer

If thermoregulation is considered to be a secondary function of the large ears of jackrabbits, then the primary function of the ears is

Bonus Answer: to detect predators

81. BIOLOGY

Toss Up: Short Answer

An ecologist recorded 12 white-tailed deer, *Odocoileus virginianus*, per square mile in one woodlot and 20 per square mile in another woodlot. What was the ecologist comparing?

Bonus Answer: density

Bonus: Short Answer

Why do populations grow more slowly as they approach their carrying capacity?

Bonus Answer: Density-dependent factors lead to fewer births and increased mortality. (Accept Density-Dependent factors)

82. BIOLOGY

Toss Up: Short Answer

What is the central dogma?

Bonus Answer: DNA to RNA to Protein.

Bonus: Short Answer

What types of RNA are used in translation.

Bonus Answer: mRNA and tRNA

83. BIOLOGY

Toss Up: Multiple Choice

Which of the following places contains ribosomes?

- W) Rough endoplasmic reticulum
- X) Smooth endoplasmic reticulum
- Y) Cell wall
- Z) lysosomes

Toss Up Answer: W

Bonus: Short Answer

Do prokaryotic cells have ribosomes?

Bonus Answer: Yes

84. BIOLOGY

Toss Up: Short Answer

Where is prokaryotic genetic material located?

Bonus Answer: plasmids

Bonus: Short Answer

Do prokaryotic cells have cell walls?

Bonus Answer: Yes

=====

85. BIOLOGY

Toss Up: Short Answer

What is the most current model of the cell membrane called?

Bonus Answer: Fluid Mosaic Model

=====

Bonus: Short Answer

Who came up with the fluid mosaic model?

Bonus Answer: SJ Singer and GL Nicolson

=====

86. BIOLOGY

Toss Up: Short Answer

What is the name of the proteins in cell membranes that allow for rapid transport of water into and out of the cell?

Bonus Answer: Aquaporins

=====

Bonus: Short Answer

What membrane bound structures in cells are important for exocytosis?

Bonus Answer: transport vesicles

=====

87. BIOLOGY

Toss Up: Multiple Choice

Which of the following enzymes makes C4 and CAM species more efficient in hotter, dryer climates?

W) phosphofructokinase

X) Rubisco

Y) DNA polymerase

Z) PEP Carboxylase

Toss Up Answer: Z

=====

Bonus: Short Answer

During the light dependent reactions, on what membrane does ATP synthesis take place via ATP Synthase?

Bonus Answer: thylakoid, thylakoid membrane

=====

88. BIOLOGY

Toss Up: Short Answer

What part of the brain controls the interaction between the two hemispheres?

Bonus Answer: corpus callosum

=====

Bonus: Short Answer

Which lobe of the brain is known for spatial reasoning and navigation?

Bonus Answer: parietal lobes

=====

89. BIOLOGY

Toss Up: Short Answer

Defects in the myelin sheath lead to what disease?

Bonus Answer: Multiple Sclerosis

=====

Bonus: Short Answer

From which parent do we inherit mitochondrial DNA?

Bonus Answer: Mothers, maternal

90. BIOLOGY

Toss Up: Multiple Choice

Metastasis involves

W) decreased levels of proteins that regulate metalloproteins

X) programmed cell death

Y) closing of aromatic rings

Z) bioinformatic analysis of clinical trial

Toss Up Answer: W

Bonus: Multiple Choice

BRAC1, an inherited form of breast cancer, regulates cell division by

W) binding to a DNA sequence

X) binding to the protein RAD 51 which repairs DNA damage

Y) complexing with cyclins

Z) binding to the cell outer membrane

Bonus Answer: X

91. BIOLOGY

Toss Up: Multiple Choice

Which protein did Nobel Laureate Christian Anfinsen characterize to come to the conclusion that the native structure is determined only by the protein's amino acid sequence?

W) catalase

X) ribonuclease A

Y) luciferase

Z) amylase

Toss Up Answer: X

Bonus: Short Answer

What is the name of the thought experiment that postulates that because of the very large number of degrees of freedom in an unfolded polypeptide chain, the molecule has an astronomical number of possible conformations?

Bonus Answer: Levinthal's paradox OR Levinthal

92. BIOLOGY

Toss Up: Multiple Choice

The BLAST program is used in

W) Bioinformatics

X) DNA Sequencing

Y) Amino acid Sequencing

Z) DNA Barcoding

Toss Up Answer: W

Bonus: Multiple Choice

Phylogenetic relationships can be shown by

W) Dendrogram

X) Gene bank

Y) Data retrieving tool

Z) Data search tool

Bonus Answer: W

=====

93. BIOLOGY

Toss Up: Multiple Choice

Proteonomics is the study of

- W) sets of proteins
- X) sets of proteins in a specific organelle
- Y) entire set of expressed proteins in a cell
- Z) none of these

Toss Up Answer: Y

Bonus: Multiple Choice

The computational methodology that tries to find the best matching between two molecules, a receptor and ligand called:

- W) molecular matching
- X) molecular docking
- Y) molecular fitting
- Z) molecule affinity checking

Bonus Answer: X

=====

94. BIOLOGY

Toss Up: Multiple Choice

The field of biostatistics is also called

- W) statistics in biology
- X) bionemerology
- Y) biometry
- Z) Both W and X

Toss Up Answer: Y

Bonus: Multiple Choice

The word [must be said in a German accent] "statistik" in German means:

- W) calculation
- X) government
- Y) maths
- Z) classification

Bonus Answer: X

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