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

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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

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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

==========

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 Leeuenhoek and Ricketts
Z) Berg and Hooke

Toss Up Answer: W

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

==========

8. BIOLOGY

Toss Up: Short Answer

What is considered the most unifying concept in biology?

Bonus Answer: Evolution

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

==========

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

Bonus: Short Answer

Give the binomial nomenclature of the pathogen that causes anthrax:

Bonus Answer: Bacillus anthracis

==========

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

==========

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

==========

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

==========

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

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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)

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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 do 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)

==========

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

==========

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)

==========

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

==========

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.

==========

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**

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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

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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) Argenine 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

==========

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

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

==========

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

Bonus: Short Answer

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

Bonus Answer: Duodenum, Jejunum, Ileum

==========

45. BIOLOGY

Toss Up: Short Answer

Where is the smallest bone in your body located?

Bonus Answer: Ear

Bonus: Short Answer

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

Bonus Answer: Stapes, Stirrup

==========

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

==========

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 it resultant molecule called when carbon dioxide attaches to hemoglobin?

Bonus Answer: Carbaminohemoglobin

==========

54. BIOLOGY

Toss Up: Short Answer

What organelle does the cisternal maturation model describe?

Bonus Answer: Golgi apparatus; Golgi complex

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

==========

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

Bonus: Short Answer

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

Bonus Answer: hypercythemia; erythrocythemia; hypererythrocythemia

==========

56. BIOLOGY

Toss Up: Short Answer

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

Bonus Answer: Renin

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

==========

57. BIOLOGY

Toss Up: Short Answer

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

Bonus Answer: Chief cells

Bonus: Short Answer

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

Bonus Answer: Factor III; Tissue Factor; Thromboplastin

==========

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

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

==========

62. BIOLOGY

Toss Up: Short Answer

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

Bonus Answer: integral proteins ad phospholipids

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

==========

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

Bonus: Short Answer

N-Acetylglucosamine is the monomer of which common polysaccharide?

Bonus Answer: Chitin

==========

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

Bonus: Short Answer

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

Bonus Answer: Chaperonins

==========

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 election 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) adrenocorticotropic 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

BRACI, 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

==========

95. BIOLOGY

Toss Up: Multiple Choice

Which of the following phospholipids is released by phagocytic cells and leads to superoxide radical production in alveoli macrophages?

W) Plasmalogens

X) Phosphatidylinositol

Y) Cardiolipin

Z) Platelet activating factor

Toss Up Answer: Z

Bonus: Short Answer

Which of the following forms of movement do the phospholipids of plasma membranes have routinely exhibit? Answer with the number.

1. Diffusion in the plane of the bilayer
2. Translocation from one side of the bilayer to the other side
3. Rotation of fatty-acid residues around saturated carbon atoms

Bonus Answer: 1 and 3

==========

96. BIOLOGY

Toss Up: Multiple Choice

Animals and fungi are both characterized as heterotrophic. The distinguishing factor of animal heterotrophy from fungal heterotrophy is that only animals derive their nutrition by

W) consuming living, rather than dead, prey.
X) preying on animals
Y) ingesting it
Z) using enzymes for digestion

Toss Up Answer: Y

Bonus: Multiple Choice

At which developmental stage should one be able to first distinguish a diploblastic embryo from a triploblastic embryo?

W) fertilization
X) gastrulation
Y) coelom formation
Z) cleavage

Bonus Answer: X

==========

97. BIOLOGY

Toss Up: Multiple Choice

Which biome is characterized by population oscillations?

W) Temperate Deciduous
X) Tropical Rainforest
Y) Tundra
Z) Taiga

Toss Up Answer: Y

Bonus: Short Answer

Large-scale population oscillations in the tundra are caused by what abiotic factor?

Bonus Answer: Thawing and freezing of the ice (Also accept: population migrations)

==========

98. BIOLOGY

Toss Up: Multiple Choice

Which disease was famously eradicated in 1977?

W) Polio
X) Smallpox

Y) Mumbs
Z) AIDS
Toss Up Answer: X

Bonus: Short Answer
Which human body system is attacked by AIDS?
Bonus Answer: Immune system

==========

99. BIOLOGY

Toss Up: Multiple Choice
Which pair of organisms is correctly matched with the interspecific interaction?
W) Commensalism: Clownfish and sea anemone
X) Parasitism: Whales and barnacles
Y) Mutualism: Oxpecker and rhino
Z) Predation: Apes and bees
Toss Up Answer: Y

Bonus: Short Answer
List the 5 types of interspecific interaction.
Bonus Answer: Predation, Commensalism, Parasitism, Mutualism, Neutral

==========

100. BIOLOGY

Toss Up: Short Answer
How many ATP molecules are produced by the Calvin cycle?
Bonus Answer: 0

Bonus: Short Answer
How many ATP are used in the Calvin cycle to make one glucose molecule?
Bonus Answer: 18

==========

101. BIOLOGY

Toss Up: Multiple Choice
The phenomenon by which diploid cells cease to divide is known as
W) parthenogenesis
X) alternation of generations
Y) cellular senescence
Z) lysis
Toss Up Answer: Y

Bonus: Short Answer
What country has the highest human life expectancy?
Bonus Answer: Japan

==========

102. BIOLOGY

Toss Up: Short Answer
What term describes the number of times a normal human cell population can divide?
Bonus Answer: Hayflick limit

Bonus: Multiple Choice
What controls the Hayflick limit?

W) apoptosis
X) length of telomeres
Y) genomic instability
Z) genetic drift

Bonus Answer: X

==========

103. BIOLOGY

Toss Up: Short Answer

Which two monosaccharides make up lactose?

Bonus Answer: Glucose and galactose

Bonus: Short Answer

Which two monosaccharides make up sucrose?

Bonus Answer: Glucose and fructose

==========

104. BIOLOGY

Toss Up: Short Answer

What are the purine bases in DNA?

Bonus Answer: Adenine and guanine

Bonus: Short Answer

What are the pyrimidine bases in RNA?

Bonus Answer: Cytosine and uracil

==========

105. BIOLOGY

Toss Up: Multiple Choice

The purpose of Glial cells is to
W) insulate and protect neurons
X) insulate and protect endothelial cells
Y) protect the body from viral diseases
Z) reinforce smooth muscle

Toss Up Answer: W

Bonus: Short Answer

Blood is to the circulatory system as hemolymph is to the

Bonus Answer: hemocoel

==========

106. BIOLOGY

Toss Up: Short Answer

Platelets are pieces of what type of cell?

Bonus Answer: Megakaryocytes

Bonus: Multiple Choice

Where do erythrocytes develop?
W) spleen
X) trabecular bone
Y) cortical bone
Z) bone marrow

Bonus Answer: Z

==========

107. BIOLOGY

Toss Up: Multiple Choice

Rett syndrome displays which of the following inheritance patterns?

W) Autosomal Dominant

X) Autosomal Recessive

Y) X-Linked Dominant

Z) X-Linked Recessive

Toss Up Answer: Y

Bonus: Short Answer

In the genetic disorder known as cri-du-chat, what chromosome is affected?

Bonus Answer: Chromosome 5

==========

108. BIOLOGY

Toss Up: Multiple Choice

What kind of typing is used to identify tissue-specific gene expression?

W) Southern Blot

X) Northern Blot

Y) Western Blot

Z) Radioactive Tracer

Toss Up Answer: X

Bonus: Multiple Choice

Which genetic disorder is mainly characterized by an onset in middle age?

W) Huntington's Disease

X) Schizophrenia

Y) Prader-Willi syndrome

Z) Tay-Sachs Syndrome

Bonus Answer: W

==========

109. BIOLOGY

Toss Up: Multiple Choice

Which of the following enzymes are not utilized by the human body to break down carbohydrates?

W) Amylase

X) Maltase

Y) Lactase

Z) Lipase

Toss Up Answer: Z

Bonus: Multiple Choice

Which of the following is a valid difference between animal and plant cells?

W) Animal cells have a cell membrane whereas plant cells do not.

X) Animal cells contain mitochondria whereas plant cells cannot.

Y) Animal cells can contain multiple vacuoles whereas plant cells cannot.

Z) Animal cells are larger than plant cells.

Bonus Answer: Y

==========

110. BIOLOGY

Toss Up: Multiple Choice

The myofilaments of muscles consist primarily of two proteins. These two proteins are called

W) actin and myosin

X) progesterone and testosterone

Y) progesterone and estrogen

Z) estrogen and testosterone

Toss Up Answer: W

Bonus: Short Answer

The alternative forms of gene at the same locus on homologous chromosomes are called what?

Bonus Answer: alleles

==========

111. BIOLOGY

Toss Up: Short Answer

Rough endoplasmic reticulum is named rough because it possesses what cellular structures?

Bonus Answer: ribosomes

Bonus: Short Answer

What is the anatomical term for the specific section of the small intestine into which the pancreatic duct delivers its digestive enzymes?

Bonus Answer: duodenum

==========

112. BIOLOGY

Toss Up: Multiple Choice

Robert Hooke coined the term ‘cell’ mostly because of

W) his observations of red blood cells

X) his observations of cork cells

Y) his analysis of hundreds of different protozoans

Z) his readings of the works of other early microscopists

Toss Up Answer: X

Bonus: Multiple Choice

Who is known as the "father of microbiology"?

W) Hans Jansen

X) Robert Hooke

Y) Antony van Leeuwenhoek

Z) Hans Solo

Bonus Answer: Y

==========

113. BIOLOGY

Toss Up: Multiple Choice

The adult human of average age and size has approximately how many quarts of blood?

W) 4
X) 6
Y) 8
Z) 10

Toss Up Answer: X

Bonus: Multiple Choice

When a human donor gives a pint of blood, it usually requires how many weeks for the body RESERVE of red corpuscles to be replaced?
W) 1 week
X) 3 weeks
Y) 7 weeks
Z) 21 weeks

Bonus Answer: Y

==========

114. BIOLOGY

Toss Up: Multiple Choice

The several types of white blood cells are sometime collectively referred to as:
W) erythrocytes (pron: eh-rith-row-cites)
X) leukocytes (pron: lew-kah-cites)
Y) erythroblasts (pron: eh-rith-rah-blast)
Z) thrombocytes (pron: throm-bow-cites)

Toss Up Answer: X

Bonus: Short Answer

There are three substances found in human blood which carry oxygen and which begin with the letter "H". Name two of these substances.

Bonus Answer: Any 2 of the following: Hemoglobin, Hemocyanin, Hemerythrin

==========

115. BIOLOGY

Toss Up: Multiple Choice

The smallest of the FORMED elements of the blood are the:
W) white cells
X) red cells
Y) platelets
Z) erythrocytes (pron: eh-rith-row-cites)

Toss Up Answer: Y

Bonus: Multiple Choice

The condition in which there is a DECREASE in the number of white blood cells in humans is known as:
W) leukocytosis (pron: lew-kO-sigh-toe-sis)
X) leukopenia (pron: lew-kO-pea-nee-ah)
Y) leukemia (pron: lew-kee-me-ah)
Z) leukohyperia (pron: lew-kO-high-per-e-ah)

Bonus Answer: X

==========

116. BIOLOGY

Toss Up: Multiple Choice

In the human brain, body temperature, metabolism, heart rate, sexual development, sleep and the body's use of fat and water are influenced by this region of the brain. This region of the brain is the:

W) hypothalamus

X) midbrain

Y) corpus callosum

Z) cerebellum

Toss Up Answer: W

Bonus: Multiple Choice

When a wound occurs in humans, the platelets in the blood activate a substance which starts the clotting process. The substance which starts the clotting is:

W) adenosine (pron: ah-den-ah-seen)

X) histamine

Y) lecithin (pron: less-ah-thin)

Z) thrombin

Bonus Answer: Z

==========

117. BIOLOGY

Toss Up: Multiple Choice

In most axons, the myelin sheath is interrupted at intervals of about 1 millimeter or more. These interruptions are called the:

W) glial

X) nodes of Ranvier (pron: ron-vee-ay)

Y) collaterals

Z) nodes of Banbinet

Toss Up Answer: X

Bonus: Multiple Choice

Cariology is the study of?

W) human hearts

X) tooth decay

Y) kidneys

Z) liver

Bonus Answer: X

==========

118. BIOLOGY

Toss Up: Multiple Choice

In cell division, what is the phase that follows metaphase?

W) prophase

X) anaphase

Y) telophase

Z) extophase

Toss Up Answer: X

Bonus: Short Answer

All cells of an organism find their lineage from a single fertilized cell. This single fertilized cell is called what?

Bonus Answer: zygote

==========

119. BIOLOGY

Toss Up: Multiple Choice

This major protein component of connective tissue in mammals comprises most of the organic matter of skin, tendons, bones, and teeth, and occurs as fibrous inclusions in most other body structures. What is this protein component called?

W) elastin
X) collagen
Y) fatty acids
Z) keratin

Toss Up Answer: X

Bonus: Short Answer

Name the clear watery liquid that surrounds the brain and spinal cord and fills the four cavities or ventricles of the brain.

Bonus Answer: cerebrospinal fluid

==========

120. BIOLOGY

Toss Up: Multiple Choice

The resting potential of a neuron is dependent on what two ions?

W) lead and calcium ions
X) calcium and phosphate ions
Y) sodium and potassium ions
Z) potassium and phosphate ions

Toss Up Answer: Y

Bonus: Multiple Choice

Which of the following is NOT a type of neuron?

W) sensory
X) motor
Y) association
Z) stimulatory

Bonus Answer: Z

==========

121. BIOLOGY

Toss Up: Multiple Choice

Melatonin (pron: mel-eh-toe-nin) is produced by the:

W) skin
X) pineal gland
Y) liver
Z) pituitary gland

Toss Up Answer: X

Bonus: Multiple Choice

Which of the following statements is TRUE of insulin?

W) secreted by the pancreas

X) involved in the metabolism of glucose

Y) a protein

Z) all of the above

Bonus Answer: Z

==========

122. BIOLOGY

Toss Up: Multiple Choice

Fertilization of the ovum by the sperm usually occurs in the:

W) oviduct

X) vagina

Y) uterus

Z) ovary

Toss Up Answer: W

Bonus: Multiple Choice

Which of the following structures is directly attached to the ovary?

W) oviduct

X) uterus

Y) suspensory ligaments

Z) vagina

Bonus Answer: Y

==========

123. BIOLOGY

Toss Up: Multiple Choice

During which phase of the cell cycle are normal components of the
cell synthesized and assembled?

W) the M phase

X) the G1 phase

Y) the S phase

Z) the G2 phase

Toss Up Answer: X

Bonus: Short Answer

If an individual has two dissimilar alleles for a trait, with regard to that trait he is said to be:

Bonus Answer: heterozygous

==========

124. BIOLOGY

Toss Up: Short Answer

How many chromosomes per cell does a Down's Syndrome (trisomy 21) victim have?

Bonus Answer: 47

Bonus: Short Answer

If a male who is heterozygous for an autosomal trait mates with a female who is

also heterozygous for that trait, what percent of their offspring are likely to be heterozygous for this trait as well?

Bonus Answer: 50%

==========

125. BIOLOGY

Toss Up: Short Answer

Glucose is stored as what molecule in plants?

Bonus Answer: starch

Bonus: Short Answer

What is the most common name of the protein that synthesizes DNA?

Bonus Answer: DNA polymerase (ACCEPT: polymerase)

==========

126. BIOLOGY

Toss Up: Multiple Choice

Which of the following is not a strong acid?

W) H_2SO_4

X) HNO_3

Y) HClO

Z) $HClO_4$

Toss Up Answer: Y

Bonus: Short Answer

In a 1M solution of $HClO_4$, what are the two ions and what are their concentrations?

Bonus Answer: 1 M H^+ , 1 M ClO_4^-

==========

127. BIOLOGY

Toss Up: Short Answer

What is the largest internal organ in the human body

Bonus Answer: liver

Bonus: Multiple Choice

Plants that grow under average temperature and moisture are called:

W) halophytes

X) xerophytes

Y) hydrophytes

Z) mesophytes

Bonus Answer: Z

==========

128. BIOLOGY

Toss Up: Multiple Choice

Polio is caused by which type of microbe?

W) Bacteria

X) Fungus

Y) Prion

Z) Virus

Toss Up Answer: Z

Bonus: Short Answer

Which human body system does polio most directly affect?

Bonus Answer: Nervous system (accept Central nervous system)

==========

129. BIOLOGY

Toss Up: Short Answer

What is class of proteins "unzips" the DNA strands into two?

Bonus Answer: DNA helicase

Bonus: Short Answer

What is the probability that a cross between two parents with the same genotype of AaBbCcDd will result in an offspring of the same genotype as their parents?

Bonus Answer: 1/16

==========

130. BIOLOGY

Toss Up: Short Answer

What is the arrangement of microtubules in a motile cilium called?

Bonus Answer: 9 + 2 ('nine plus two')

Bonus: Short Answer

What are the common large motor proteins that move flagella and motile cilia called?

Bonus Answer: dyneins (accept: dynein)

==========

131. BIOLOGY

Toss Up: Short Answer

What is the main fiber that makes up the extracellular matrix?

Bonus Answer: Collagen

Bonus: Multiple Choice

Which of the following allow for cell signaling?

I. Desmosomes II. Gap Junctions III. Tight Junctions IV. Plasmodesmata

W) I, II, III

X) II and IV

Y) II and III

Z) I and IV

Bonus Answer: X

==========

132. BIOLOGY

Toss Up: Multiple Choice

Which of the following pairs of scientists elucidated the current model of the cell membrane?

W) Frye and Edidin

X) Davson and Danielli

Y) Singer and Nicholson

Z) Gorter and Grendel

Toss Up Answer: Y

Bonus: Short Answer

Which of the following allow the protist Paramecium caudatum to survive in their hypotonic environments? I. Plasma membrane II. Cell Wall

III. Pseudopodia IV. Contractile Vacuole

Bonus Answer: I and IV

==========

133. BIOLOGY

Toss Up: Short Answer

What molecule is the phosphorylated intermediate of the ATP-coupled reaction derived from?
The reaction is glutamic acid + ammonia --> glutamine. The free energy change is +3.4 kcal/mol.

Bonus Answer: Glutamic Acid

Bonus: Short Answer

The evolution of enzymes was traced in an experiment with E. coli. What enzyme was mutated in the experiment?

Bonus Answer: beta-galactosidase

==========

134. BIOLOGY

Toss Up: Multiple Choice

What enzyme, which can be inhibited or activated, serves as the point in which the cell is committed to performing glycolysis?
W) Hexokinase
X) Phosphoglucoisomerase
Y) Phosphoglycerokinase
Z) Phosphofructokinase

Toss Up Answer: Z

Bonus: Multiple Choice

The electrons from the electron carrier FADH2 are initially shuttled to which complex in the electron transport chain?
W) complex I
X) complex II
Y) complex III
Z) complex IV

Bonus Answer: X

==========

135. BIOLOGY

Toss Up: Multiple Choice

During chemiosmosis, protons enter and exit which component of the ATP synthase complex?
W) rotor
X) internal rod
Y) stator
Z) catalytic knob

Toss Up Answer: Y

Bonus: Short Answer

What is the name of the only member of the electron transport chain in cellular respiration that is not a protein?

Bonus Answer: Ubiquinone

==========

136. BIOLOGY

Toss Up: Short Answer

What molecule or one of its derivatives serves as the final electron acceptor in fermentation?

Bonus Answer: Pyruvate

Bonus: Short Answer

In alcoholic fermentation, pyruvate is converted to a compound which acts as the final electron acceptor, being converted to ethanol in the process. What is this compound called?

Bonus Answer: Acetaldehyde

==========

137. BIOLOGY

Toss Up: Short Answer

What is the process of breaking down fatty acids and converting them to acetyl CoA called?

Bonus Answer: beta oxidation

Bonus: Short Answer

For every 6 molecules of carbon dioxide consumed for photosynthesis, how many molecules of water are consumed?

Bonus Answer: 12

==========

138. BIOLOGY

Toss Up: Multiple Choice

Theodore Engelmann performed a famous experiment with filamentous algae and aerobic bacteria. What was he trying to find out about photosynthesis?

W) action spectrum

X) absorption spectrum

Y) electromagnetic spectrum

Z) spectrophotomic range

Toss Up Answer: W

Bonus: Short Answer

What metallic atom is at the center of the light-absorbing head of a chlorophyll molecule?

Bonus Answer: Magnesium

==========

139. BIOLOGY

Toss Up: Short Answer

What is the process of electrons being shuttled between Photosystem I and the cytochrome complex called?

Bonus Answer: cyclic electron flow

Bonus: Multiple Choice

In linear electron flow during the light reactions, electrons shuttled by Plastocyanin reduce what molecule?

W) P700

X) P680

Y) Plastoquinone

Z) Ferredoxin

Bonus Answer: W

==========

140. BIOLOGY

Toss Up: Multiple Choice

Which of these is not an abiotic factor that influences climate?

W) Sunlight

X) Precipitation

Y) Wind

Z) Bodies of water

Toss Up Answer: Z

Bonus: Short Answer

What type of population distribution characterizes human populations?

Bonus Answer: Clumped distribution (Accept clumped)

==========

141. BIOLOGY

Toss Up: Short Answer

What individual cell structure comprises polysomes?

Bonus Answer: Ribosome

Bonus: Short Answer

What is the complementary RNA for [read slowly] CAGGGTAC?

Bonus Answer: GUCCCAUG

==========

142. BIOLOGY

Toss Up: Short Answer

What muscle of the respiratory system regulates primarily regulates breathing?

Bonus Answer: Diaphragm

Bonus: Short Answer

What protein catalyzes the reaction of carbon dioxide with water to form bicarbonate ion and hydrogen ion?

Bonus Answer: Carbonic anhydrase

==========

143. BIOLOGY

Toss Up: Short Answer

What types of macromolecules to lipase break down?

Bonus Answer: Lipids

Bonus: Short Answer

What lobe of the brain is associated with vision?

Bonus Answer: Occipital Lobe

==========

144. BIOLOGY

Toss Up: Short Answer

What type of tissue are the urinary bladder comprised of?

Bonus Answer: Transitional epithelium

Bonus: Short Answer

The walls of the heart consist of three layers. What is the middle layer called, which is also the main layer that allows the heart's muscular contractions?

Bonus Answer: Myocardium

==========

145. BIOLOGY

Toss Up: Short Answer

The flow of what ion allows ATP synthase to synthesize ATP?

Bonus Answer: H+, hydrogen ion, proton

Bonus: Short Answer

Which cellular structures oxygen to oxidize complex molecules to produce a by-product of hydrogen peroxide?

Bonus Answer: Peroxisome

==========

146. BIOLOGY

Toss Up: Multiple Choice

How is oxygen transported in blood?

W) It is dissolved in the blood

X) It is carried by hemoglobin on white blood cells

Y) It is carried by hemoglobin on red blood cells

Z) It is carried by hemoglobin on platelets

Toss Up Answer: Y

Bonus: Short Answer

By name or by number, identify which of the following was can carbon dioxide be transported in blood?

1. It can be dissolved in the blood
2. It can be carried by hemoglobin on white blood cells
3. It can be carried by hemoglobin on red blood cells
4. It can be carried by hemoglobin on platelets

Bonus Answer: 1 & 3

==========

147. BIOLOGY

Toss Up: Multiple Choice

Which of the following polysaccharides is commonly found in the exoskeleton of insects?

W) Cellulose

X) Chitin

Y) Starch

Z) Glycogen

Toss Up Answer: X

Bonus: Multiple Choice

In which stage of cellular respiration is glucose broken down into two pyruvate molecules?

W) Krebs Cycle

X) Electron Transport Chain

Y) Glycolysis

Z) Oxidative Phosphorylation

Bonus Answer: Y

==========

148. BIOLOGY

Toss Up: Short Answer

In photosynthesis, what are the three products released from hydrolysis?

Bonus Answer: Hydrogen or Hydrogen Ions (H+) , Oxygen or Oxygen Gas , and Electrons

---

Bonus: Multiple Choice

Which of the following carbohydrates the human body can NOT digest?

W) Fructose

X) Cellulose

Y) Sucrose

Z) Dextrose

Bonus Answer: X

==========

149. BIOLOGY

Toss Up: Multiple Choice

Which of the following stages in cellular respiration generates the most ATP (Adenosine triphosphate) ?

W) Krebs Cycle

X) Glycolysis

Y) Electron Transport Chain

Z) Pyruvate Oxidation

Toss Up Answer: Y

Bonus: Short Answer

In cellular respiration, there are two main electron carriers produced. What are their chemical formulas?

Bonus Answer: NADH and FADH2 (Some may mention the "empty forms" of these electron carriers: NAD+ and FAD ; those answers are acceptable as well).

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150. BIOLOGY

Toss Up: Short Answer

What is the name of the process wherein osteoblasts lay down new bone material?

Bonus Answer: Ossification, Osteogenesis, Bone Tissue Formation

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Bonus: Short Answer

What is the name of the structure within a bone that creates a network containing blood vessels?

Bonus Answer: Haversian Canals

==========

151. BIOLOGY

Toss Up: Multiple Choice

An individual suffers brain damage that results in respiratory failure. Which region of the brain was most likely damaged?

W) Substantia nigra

X) Pons

Y) Red nucleus

Z) Reticular formation

Toss Up Answer: X

Bonus: Multiple Choice

A man and a woman get married and soon learn that they both have a rare, genetically inherited recessive disorder that makes them prone to dizziness. Worried about the fate of their children, they seek the advice of a genetic counselor. She sequences their genomes and assures them that
none of their children will have the disorder. What information would she have to obtain from the sequencing procedure that allows her to make this claim?

W) The dizziness phenotype in the man is due to a mutation in a gene other than the gene responsible for the woman's phenotype.

X) The dizziness disorder is an autosomal recessive trait.

Y) The man and the woman are related genetically causing the same dizziness phenotype.

Z) It is impossible for the man and the woman to have unaffected children - the genetic counselor is wrong.

Bonus Answer: W

==========

152. BIOLOGY

Toss Up: Short Answer

After 12 weeks of gestation, what is the principal source of estrogen and progesterone to a human fetus?

Bonus Answer: corpus luteum

Bonus: Multiple Choice

Fat enters the venous system from the digestive system via the:

W) hepatic artery

X) hepatic vein

Y) thoracic duct

Z) hepatic portal system

Bonus Answer: Y

==========

153. BIOLOGY

Toss Up: Multiple Choice

What is the probability of obtaining offspring with the AAbbCCdd genotype from parents with the genotypes AaBbCcDd and AABbCcDd (assume independent assortment of all gene pairs)?

W) 1/64

X) 1/128

Y) 3/128

Z) none of the above

Toss Up Answer: X

Bonus: Multiple Choice

A red pigment is extracted from a marine alga. Which best supports the hypothesis that the pigment is involved in photosynthesis? The red pigment:

W) has an absorption spectrum similar to the photosynthetic action spectrum for that same marine alga

X) contains iron which is a transition element similar to magnesium.

Y) has a molecular structure similar to that of chlorophyll.

Z) is also found in land plants together with a variety of other pigments and specific enzymes that are related to the action spectrum for photosynthesis.

Bonus Answer: W

==========

154. BIOLOGY

Toss Up: Multiple Choice

Which of the following are characteristics of both bacteria and fungi?

W) Cell wall, unicellularity, and mitochondria

X) Cell wall, DNA, and plasma membrane

Y) Nucleus, organelles, and unicellularity

Z) Nucleus, RNA, and cell wall

Toss Up Answer: X

Bonus: Multiple Choice

Terminally differentiated cells are most often found in which phase of the cell cycle?

W) G0

X) G1

Y) G2
Z) S

Bonus Answer: W

==========

155. BIOLOGY

Toss Up: Multiple Choice

Which of the following cells come from megakaryocytes?
W) Erythrocytes
X) Leukocytes
Y) Blood Thrombocytes
Z) Osteocytes

Toss Up Answer: Y

Bonus: Multiple Choice

Which of the following diseases is caused by a point mutation?
W) Huntington's Disease
X) Hemophilia B
Y) Cystic Fibrosis
Z) Tay-Sachs Disease

Bonus Answer: X

==========

156. BIOLOGY

Toss Up: Short Answer

What hormone is released in response to low blood sugar levels?

Bonus Answer: glucagon

Bonus: Multiple Choice

Which of the following changes occur upon the activation of the sympathetic nervous system?
W) Heart rate increases
X) Rate of digestion increases
Y) Pupils constrict
Z) Glucose is converted to glycogen

Bonus Answer: W

==========

157. BIOLOGY

Toss Up: Short Answer

How many classes of immunoglobulins are there in the human body?

Bonus Answer: 5

Bonus: Short Answer

Which immunoglobulin is the largest, with 10 light and heavy chains each?

Bonus Answer: IgM, Immunoglobulin M, Immunoglobulin Mu

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158. BIOLOGY

Toss Up: Short Answer

What are noncoding regions of dna called?

Bonus Answer: introns

Bonus: Short Answer

What are coding regions of dna called?

Bonus Answer: exons

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159. BIOLOGY

Toss Up: Short Answer

The A site, P site, and E site are located in which organelle?

Bonus Answer: ribosome

Bonus: Short Answer

Which site does the tRNA enter the ribosome?

Bonus Answer: A site, aminoacyl-tRNA site

==========

160. BIOLOGY

Toss Up: Short Answer

What is the name of the gene recombination that allows for the diversity of an antibody's heavy chain?

Bonus Answer: V(D)J Recombination

Bonus: Short Answer

Which scientist won a Nobel prize in 1987 in Physiology or Medicine for his discovery on the mechanism behind antibody diversity?

Bonus Answer: Susumu Tonegawa, Tonegawa

==========

161. BIOLOGY

Toss Up: Short Answer

What is the name of the gene sequence that is recognized by VDJ recombinases?

Bonus Answer: Recombination signal sequences, RSS

Bonus: Short Answer

In V(D)J recombination, which enzyme adds nucleotides to allow for further diversity?

Bonus Answer: Terminal Deoxynucleotidyl Transferase, TdT

==========

162. BIOLOGY

Toss Up: Short Answer

What is the origin of replication of DNA called?

Bonus Answer: Ori

Bonus: Short Answer

What is the ori of Escherichia Coli called?

Bonus Answer: OriC

==========

163. BIOLOGY

Toss Up: Multiple Choice

Which of the following are true regarding angiosperm seed development?

W) Seeds often develop on leaves

X) They often exist in cone form

Y) Seeds are enclosed within the ovary

Z) Seeds are on the stamen

Toss Up Answer: Y

Bonus: Short Answer

What enzyme catalyses the removal of electrons?

Bonus Answer: oxidase

==========

164. BIOLOGY

Toss Up: Multiple Choice

How is the lagging strand of DNA synthesised during DNA replication?

W) Semi-conservatively

X) Okazaki Fragments

Y) With topoisomerase

Z) Continuously

Toss Up Answer: X

Bonus: Short Answer

What is the purpose of topoisomerase?

Bonus Answer: Ensure that DNA isn't wound to tightly

==========

165. BIOLOGY

Toss Up: Short Answer

What is the purpose of SSBs (single strand binding proteins) in DNA replication?

Bonus Answer: To prevent hybridisation of original parent strands

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Bonus: Short Answer

What is the origin of replication called?

Bonus Answer: Ori

==========

166. BIOLOGY

Toss Up: Short Answer

What are the two types of amino acids?

Bonus Answer: Polar and non polar R groups

Bonus: Short Answer

What determines the properties of an amino acid?

Bonus Answer: Its variable R group

==========

167. BIOLOGY

Toss Up: Short Answer

Complete the analogy: RBC is to hematopoietin as platelet is to

Bonus Answer: thrombopoietin

Bonus: Short Answer

Hemocytoblasts can branch into two common progenitor cells. What lineage are erythrocytes part of?

Bonus Answer: Myeloid lineage

==========

168. BIOLOGY

Toss Up: Short Answer

In the light dependent reactions of photosynthesis, what molecule supplies the initial electrons?

Bonus Answer: H2O OR water

Bonus: Short Answer

In cellular respiration, the Carbon in carbon dioxide that is released comes from what original molecule?

Bonus Answer: glucose

==========

169. BIOLOGY

Toss Up: Multiple Choice

Which immune cell does HIV directly target?

W) B Cells

X) Immunoglobulins

Y) CD4 Cells

Z) Killer T Cells

Toss Up Answer: Y

Bonus: Short Answer

Individuals heterozygous for the gene for which genetic disease have increased immunity to malaria?

Bonus Answer: Sickle Cell Anemia

==========

170. BIOLOGY

Toss Up: Short Answer

Of the following, name the conifers: pine, hemlock, palm, maple, cedar

Bonus Answer: pine, hemlock, and cedar or 1, 2, and 5 (in any order)

Bonus: Multiple Choice

What pigment is responsible for the red coloring of cranberries and the purple coloring of eggplant?

W) lycopene

X) anthocyanin

Y) carotene

Z) zeaxanthin

Bonus Answer: X

==========

171. BIOLOGY

Toss Up: Multiple Choice

You have a multicellular organism that reproduces asexually by fission. When you excise a ~10,000 cell portion of its body, both the original organism and the excised portion grow into fully formed, healthy organisms. You take one of the offspring and repeat the procedure for one hundred and twenty-three generations. Each time, the resulting organisms are healthy. What must be true of the nuclei of this species?

W) The cells contain plasmids

X) The cells have multiple forms of DNA polymerase.

Y) The cells have the majority of their genome stored in circular DNA

Z) The cells contain active telomerase.

Toss Up Answer: Z

Bonus: Multiple Choice

Which of the following oligonucleotides would have the highest melting point when paired with the proper complementary strand?

W) 5'-AAAAAAAA-3'

X) 5'-ATGCATGC-3'

Y) 5’-CGCGCGCG-3’
Z) 5’-TTTTGGGG-3’

Bonus Answer: Y

==========

172. BIOLOGY

Toss Up: Multiple Choice

Which of the following is a way in which the cell increases gene expression in the nucleus?
W) Acetylation of histone tails
X) DNA methylation
Y) Locating a gene within heterochromatin
Z) Dephosphorylating DNA

Toss Up Answer: W

Bonus: Multiple Choice

Which of the following chemicals or groups of chemicals is not a major determinant of flower color?
W) Flavonols
X) Carotenoids
Y) Cyanidin
Z) Phytoalexins

Bonus Answer: Z

==========

173. BIOLOGY

Toss Up: Multiple Choice

What is the name given to the crosses that occur when maternal and paternal DNA intertwine?
W) polymerase
X) chiasmata
Y) zona pellucida
Z) cambium

Toss Up Answer: X

Bonus: Short Answer

What is the name given to the follicle cells surrounding an egg that has left the ovary?

Bonus Answer: corona radiata

==========

174. BIOLOGY

Toss Up: Multiple Choice

What is the name given to a "free-for-all" competition for resources?
W) contest competition
X) scramble competition
Y) intraspecific competition
Z) random competition

Toss Up Answer: X

Bonus: Short Answer

What form of mimicry is described as a "wolf-in-sheep's-clothing" approach?

Bonus Answer: aggressive mimicry

==========

175. BIOLOGY

Toss Up: Multiple Choice

What hormone is released by the kidneys in response to oxygen deficiency?

W) erythropoietin

X) Renin

Y) calcitonin

Z) Leptin

Toss Up Answer: W

Bonus: Short Answer

By what type of system is RBC numbers regulated?

Bonus Answer: negative-feedback system

==========

176. BIOLOGY

Toss Up: Multiple Choice

Which of the following is the largest patch containing lymphocytes?

W) lymph nodes

X) spleen

Y) thymus

Z) tonsils

Toss Up Answer: Z

Bonus: Short Answer

What mineral deficiency is associated small sex glands and growth failure?

Bonus Answer: Zinc

==========

177. BIOLOGY

Toss Up: Multiple Choice

What enzyme in the digestive system first breaks down starches?

W) protease

X) secretin

Y) cholecystokinin

Z) amylase

Toss Up Answer: Z

Bonus: Short Answer

What cavity is used cnidarians in digestion?

Bonus Answer: gastrovascular cavity

==========

178. BIOLOGY

Toss Up: Multiple Choice

Photorespiration occurs the most under which conditions?

W) High Levels of Carbon Dioxide, Low levels of Oxygen

X) in CAM plants

Y) low levels of carbon dioxide, high levels of oxygen

Z) in C4 plants

Toss Up Answer: Y

Bonus: Short Answer

How many carbons does ribulose bisphosphate have?

Bonus Answer: 5

==========

179. BIOLOGY

Toss Up: Short Answer

In the 1920's, the Russian scientist Ivan Pavlov performed a famous set of experiments on dogs. What was the experiment?

Bonus Answer: Conditioning the dogs to salivate when a bell was rung.

Bonus: Short Answer

What hormone maintains the thick lining of the uterus?

Bonus Answer: Progestrone

==========

180. BIOLOGY

Toss Up: Short Answer

What do CFC's do to the environment?

Bonus Answer: They destroy the ozone layer.

Bonus: Short Answer

Name three structures that are in plant cells but not animal cells.

Bonus Answer: Chloroplasts, cell wall, and central vacuole.

==========

181. BIOLOGY

Toss Up: Short Answer

Name three structures that are in animal cells but not plant cells.

Bonus Answer: Centrioles, Flagella

Bonus: Short Answer

What do invasive species do to the ecosystem they disrupt?

Bonus Answer: They don't have natural predators, so they crowd out the native species, effectively killing them off.

==========

182. BIOLOGY

Toss Up: Short Answer

Name three structures in cells that have double membranes.

Bonus Answer: Chloroplasts, mitochondria, and the nucleus.

Bonus: Short Answer

What do we call bacteria with double membranes?

Bonus Answer: Gram-negative bacteria.

==========

183. BIOLOGY

Toss Up: Short Answer

What hormone is released from the thyroid?

Bonus Answer: Thyroxin.

Bonus: Short Answer

What is the compacted glucose in mammals called?

Bonus Answer: Glycogen.

==========

184. BIOLOGY

Toss Up: Short Answer

What causes acid rain?

Bonus Answer: Factories produce sulfer and nitrogen as wastes, and it gets into the air and mixes with rain.

Bonus: Short Answer

Which organism takes in the most CO2 (collectively)?

Bonus Answer: Photoplankton.

==========

185. BIOLOGY

Toss Up: Multiple Choice

The function of an electron in the electron transport chain is to:

W) transfer energy from complex II to complex I.

X) pump hydrogen ions using complex II.

Y) use its free energy to pump protons against the concentration gradient.

Z) combine with phosphate when ATP is synthesized.

Toss Up Answer: Y

Bonus: Multiple Choice

Fatigue in iron deficiency anemia may be explained in part by all of the following EXCEPT:

W) a lack of functional hemoglobin in the blood.

X) the inability to synthesize ATP.

Y) a lack of functional cytochromes in the electron transport chain.

Z) a lack of functional Coenzyme Q.

Bonus Answer: Z

==========

186. BIOLOGY

Toss Up: Short Answer

What phylum are jellyfish in?

Bonus Answer: Cnidaria.

Bonus: Short Answer

What order are humans in?

Bonus Answer: Primates.

==========

187. BIOLOGY

Toss Up: Multiple Choice

Concerning the generation of ATP by oxidative phosphorylation, all of the following are true EXCEPT:

W) NADH produced in the cytosol of the cell will generate approximately 2.5 ATPs.

X) NADH produced in the mitochondria will generate approximately 2.5 ATPs.

Y) NADH produced by the succinate thiokinase reaction will generate approximately 1.5 GTPs.

Z) FADH2 produced in the mitochondria will generate approximately 1.5 ATPs.

Toss Up Answer: Y

Bonus: Multiple Choice

What enzyme does a retrovirus primarily rely on to create a copy of its genome that is ready for integration into the host genome?

W) DNA gyrase

X) RNA polymerase
Y) Reverse transcriptase
Z) DNA polymerase

Bonus Answer: Y

==========

188. BIOLOGY

Toss Up: Short Answer

What type of pathogen causes malaria?

Bonus Answer: Parasites (or protists).

Bonus: Short Answer

When specialization is starting in the fetus, what three layers are formed (inner to outer)?

Bonus Answer: Endoderm, Mesoderm, Ectoderm

==========

189. BIOLOGY

Toss Up: Multiple Choice

Certain amino acids are considered essential in an animal's diet because they cannot be produced within the organism. Which of the following cellular processes would be most DIRECTLY affected by a dietary deficiency in essential amino acids?

W) Translation of mRNA
X) Cellular respiration
Y) Cell division
Z) Oxygen transport

Toss Up Answer: W

Bonus: Multiple Choice

Integral transmembrane proteins are proteins embedded in the cell membrane. Which of the following amino acids would you MOST expect to find in the transmembrane region of such proteins?

W) Tryptophan
X) Lysine
Y) Arginine
Z) Serine

Bonus Answer: W

==========

190. BIOLOGY

Toss Up: Short Answer

Which cell does HIV attack?

Bonus Answer: The C4 Cells.

Bonus: Short Answer

What is the optimal pH for pepsin?

Bonus Answer: Around 2-3 pH.

==========

191. BIOLOGY

Toss Up: Short Answer

Which scientist studied pea plants for years to conclude a pattern was in the height?

Bonus Answer: Gregor Mendel.

Bonus: Short Answer

How is radiation harmful?

Bonus Answer: It causes cells to mutate, or spontaneously die.

==========

192. BIOLOGY

Toss Up: Multiple Choice

Acetone has a distinct smell, which many people associate with the smell of nail polish remover. What might the smell of acetone in the urine or on the breath of a patient indicate?

W) The patient might be degrading too many amino acids from muscle proteolysis.

X) The patient's body might be oxidizing too many fatty acids.

Y) The patient might have enteritis and is absorbing endproducts of fermentation.

Z) The patient might have fructose toxicity.

Toss Up Answer: X

Bonus: Multiple Choice

Which description best describes what would happen to the carbon cycle if all
detritivores suddenly went on "strike" and stopped working?

W) Carbon would increase in inorganic mass, while the atmospheric reservoir of carbon would continue to increase and plants would not be jeopardized.

X) Carbon would accumulate in organic mass, the atmospheric reservoir of carbon would decline, and plants would eventually be starved for CO_2 .

Y) Carbon would increase in organic mass, while the atmospheric reservoir of carbon would increase and plant-life would be starved for CO_2.

Z) Carbon would decrease in organic mass, while the atmospheric reservoir of carbon would increase with the result that plant-life would be starved for CO_2.

Bonus Answer: X

==========

193. BIOLOGY

Toss Up: Short Answer

How many turns in the Calvin Cycle can it produce one PGAL molecule?

Bonus Answer: 2

Bonus: Short Answer

What diffuses through the ATP syntheses in the process of photosynthesis?

Bonus Answer: Hydrogen ions/protons. The protons in the thylakoids membrane is diffused out by the process of chemiosmosis.

==========

194. BIOLOGY

Toss Up: Multiple Choice

Which of these does not result in recombinant bacteria?

W) Transformation

X) Insertion

Y) Transduction

Z) Conjugation

Toss Up Answer: X

Bonus: Short Answer

What serves as an intermediate in transduction?

Bonus Answer: Virus (accept viruses)

==========

195. BIOLOGY

Toss Up: Multiple Choice

What is the typical size range for a prokaryote?

W) .1 - 1.0 micrometer

X) .5 - 5.0 micrometer

Y) 1-10 micrometer

Z) 10-100 micrometer

Toss Up Answer: X

Bonus: Short Answer

What is the name for the factor that allows a bacteria to become a donor during conjugation?

Bonus Answer: F factor (accept fertility factor)

==========

196. BIOLOGY

Toss Up: Short Answer

What is another name for phinocytosis

?

Bonus Answer: Cell drinking.

Bonus: Multiple Choice

Sugar molecules can enter cells through

W) Exocytosis

X) Facilitated diffusion.

Y) Osmosis.

Z) ATP Synthase.

Bonus Answer: X

==========

197. BIOLOGY

Toss Up: Short Answer

Which scientist, born in 1920, is known for the discovery of DNA's double helical structure using X-ray crystallography?

Bonus Answer: Rosalind Franklin

Bonus: Short Answer

True or false?: Viruses can have DNA.

Bonus Answer: true.

==========

198. BIOLOGY

Toss Up: Short Answer

Which animal phylum was the first to develop true coelems?

Bonus Answer: Annelids (or earthworms)

Bonus: Multiple Choice

Which one of these molecules helps break down some of your food?

W) Hydrochloric Acid

X) Pepsinogen
Y) Trypsin
Z) Mucus

Bonus Answer: Y

==========

199. BIOLOGY

Toss Up: Multiple Choice

Which one of these is an enzyme?
W) Inositol
X) Lyase
Y) Alanine
Z) Butyric Acid

Toss Up Answer: X

Bonus: Multiple Choice

Which molecule is not involved in the Calvin cycle?
W) OAA
X) RuBP
Y) G3P
Z) PGA

Bonus Answer: W

==========

200. BIOLOGY

Toss Up: Multiple Choice

When electrons move closer to a more electronegative atom, what happens?
W) The more electronegative atom is reduced, and energy is consumed.
X) The more electronegative atom is reduced, and energy is released.
Y) The more electronegative atom is oxidized, and energy is released.
Z) The more electronegative atom is oxidized, and energy is consumed.

Toss Up Answer: X

Bonus: Short Answer

Where does glycolysis take place in eukaryotic cells?

Bonus Answer: Cytosol

==========

201. BIOLOGY

Toss Up: Multiple Choice

How many carbon atoms are fed into the citric acid cycle as a result of the oxidation of one molecule of pyruvate?
W) 3
X) 1
Y) 2
Z) 6

Toss Up Answer: Y

Bonus: Multiple Choice

In the absence of oxygen, yeast cells can obtain energy by fermentation, resulting in the production of

W) reduction of acetaldehyde to ethanol (ethyl alcohol).
X) oxidation of pyruvate to acetyl CoA.
Y) oxidation of ethanol to acetyl CoA
Z) reduction of ethanol to pyruvate.

Bonus Answer: W

==========

202. BIOLOGY

Toss Up: Short Answer

In marine sponges, intracellular digestion of peptides is usually immediately preceded by

Bonus Answer: Endocytosis

Bonus: Short Answer

The large surface area in the gut directly facilitates

Bonus Answer: Absorption

==========

203. BIOLOGY

Toss Up: Multiple Choice

Which of the following choices would most likely promote random distribution?
W) flocking and schooling behaviors
X) homogeneous chemical and physical factors in the environment
Y) spacing during the breeding season
Z) territorial species

Toss Up Answer: X

Bonus: Multiple Choice

The Allee effect is used to describe a population that
W) has become so large that it will have difficulty surviving and reproducing.
X) has exceeded its carrying capacity.
Y) has become so small that it will have difficulty surviving and reproducing.
Z) Is in crash decline

Bonus Answer: Y

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