

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following describes the major difference between bryophytes (pron: bry-oh-fites) and tracheophytes (pron: tray-key-o-fites)?

- a) tracheophytes can survive on land
- b) tracheophytes have seeds inside fruits
- c) tracheophytes can make their own food
- d) tracheophytes have vessels to transport materials

ANSWER: D -- TRACHEOPHYTES HAVE VESSELS TO TRANSPORT MATERIALS

BIOL-91; Short Answer: Complete the sentence. The alternative forms of gene at the same locus on homologous chromosomes are called what?

ANSWER: ALLELES

BIOL-91: Short Answer: The human pelvic girdle is composed of 3 fused bones on each side for a total of 6 bones. Name the 3 fused bones.

ANSWER: ILLIUM, ISCHIUM, and PUBIS

BIOL-91: Short Answer: What are rings of muscle which CLOSE body openings such as the lips called?

ANSWER: SPHINCTERS

BIOL-91; Multiple Choice: The myofilaments of muscles consist primarily of two proteins. These two proteins are called:

- a) actin and myosin
- b) progesterone and testosterone
- c) progesterone and estrogen

ANSWER: A -- ACTIN AND MYOSIN

BIOL-91; Short Answer: In studies of the human body, what is used to describe a blood-filled sac formed by an outpouching in an arterial or venous wall?

ANSWER: ANEURYSM

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: What French scientist is considered the father of paleontology? Was it:

- a) George Cuvier
- b) Marquis de Condorcet
- c) Jacque Tonnie
- d) Auguste Compte

ANSWER: A -- GEORGE CUVIER

BIOL-91; Multiple Choice: What Roman physician's studies of human anatomy based on lower animals served as the only text on the subject for nearly 1 centuries? Was it:

- a) Cartrum
- b) Polonius
- c) Galen
- d) Monterius

ANSWER: C -- GALEN

BIOL-91; Multiple Choice: What percentage of the atmosphere consists of carbon dioxide? Is it approximately:

- a) .03% (read: three-hundredths of a percent)
- b) 1%
- c) 5%
- d) 7%

ANSWER: A -- .03%

BIOL-91; Short Answer: What process in all living things releases carbon dioxide as a waste product?

ANSWER: RESPIRATION

BIOL-91; Short Answer: For convenience, living things are placed into various groups. The taxonomic breakdown of living things consists of the following categories:

Family, Class, Genus, Phylum, Order, Kingdom and Species  
Give the order of these terms from least specific to most specific.

ANSWER: KINGDOM, PHYLUM, CLASS, ORDER, FAMILY, GENUS, SPECIES

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: In biology, what is the word used to describe the appearance of an individual without regard to its hereditary constitution?

ANSWER: PHENOTYPE (pron: fee-no-type)

BIOL-91; Multiple Choice: The chromosomes responsible for characteristics other than sex are known by which of the following terms?

- a) ribosomes
- b) lysosomes
- c) autosomes
- d) spermatocytes

ANSWER: C -- AUTOSOMES

BIOL-91; Short Answer: What genetic term describes the situation when a part of a chromosome is broken off and lost?

ANSWER: CHROMOSOMAL DELETION

BIOL-91; Multiple Choice: Each of the following is a cell organelle except one. Which one of these is NOT a cell organelle? Is it

- a) mitochondrion
- b) lysosome
- c) cytoplasm
- d) endoplasmic reticulum

ANSWER: C -- CYTOPLASM

BIOL-91; Multiple Choice: When a color blind man marries a woman pure for normal color vision, it is probable that one of the following situations may result. Is it probable that

- a) all the children will be color blind
- b) all the grandchildren will be color blind
- c) only the sons will be colorblind
- d) half the grandsons will be color blind

ANSWER: D -- HALF THE GRANDSONS WILL BE COLOR BLIND

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following are skin receptors in humans that are sensitive to heat? Are they:

- a) end organs of Krause
- b) Meissner's corpuscles
- c) end organs of Ruffini
- d) Pacinian corpuscles

ANSWER: C -- END ORGANS OF RUFFINI

BIOL-91; Multiple Choice: Into which of the following acids is glucose broken down in the first stage of carbohydrate metabolism? Is it:

- a) pyruvic acid (pie-rue-vick acid)
- b) lactic acid
- c) hydrochloric acid
- d) citric acid

ANSWER: A -- PYRUVIC ACID

BIOL-91; Multiple Choice: Hormones are composed from many classes of molecules. As far as our present knowledge extends, hormones are NOT found in which of the following categories of substances:

- a) proteins
- b) peptides
- c) nucleic acids
- d) steroids

ANSWER: C -- NUCLEIC ACIDS

BIOL-91; Short Answer: What is the term given to a fatty acid that has more than one set of double bonds between carbons?

ANSWER: POLYUNSATURATED

BIOL-91; Multiple Choice: The process by which an amino acid loses its amino group is called:

- a) hydration
- b) deamination
- c) oxidoamination
- d) dehydration

ANSWER: B -- DEAMINATION

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: In a plasma membrane, which of the following provides a general barrier to the movement of molecules?

- a) lipids
- b) proteins
- c) carbohydrates
- d) all of these

ANSWER: A -- LIPIDS

BIOL-91; Multiple Choice: The name of the process by which oil glands in mammalian skins secrete oils is:

- a) active transport
- b) apocrine secretion
- c) holocrine secretion
- d) osmosis

ANSWER: C -- HOLOCRINE SECRETION

BIOL-91; Multiple Choice: An individual with three X chromosomes is likely to be:

- a) a clinically normal female
- b) an abnormal female
- c) a Turner's individual
- d) a Klinefelter's individual

ANSWER: B -- AN ABNORMAL FEMALE

BIOL-91; Short Answer: Who is considered the father of Taxonomy?

ANSWER: (CAROLUS) LINNAEUS

BIOL-91; Multiple Choice: In the first stage of photosynthesis, light energy is used to:

- a) move water molecules
- b) denature chlorophyll
- c) split water
- d) produce carbohydrates

ANSWER: C -- SPLIT WATER

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: One-celled algae enclosed in minute two-part silic shells are called:

- a) dinoflagellates (pron: die-no-flaj-el-ates)
- b) coelenterates (pron: sell-en-ter-ates)
- c) annelids
- d) diatoms

ANSWER: D -- DIATOMS

BIOL-91; Multiple Choice: Osmoregulation is concerned with:

- a) excretion
- b) ionic regulation
- c) control of the body's water content
- d) carbon dioxide regulation

ANSWER: C -- CONTROL OF THE BODY'S WATER CONTENT

BIOL-91; Multiple Choice: Which of the following is not an arachnid?

- a) lobster
- b) scorpion
- c) black widow spider
- d) tick

ANSWER: A -- LOBSTER

BIOL-91; Multiple Choice: Which of the following is not found in blood?

- a) fibrinogen
- b) glucose
- c) urea
- d) glycogen

ANSWER: D -- GLYCOGEN

BIOL-91; Multiple Choice: Proof that plants can grow and reproduce using onl inorganic nutrients comes from the study of:

- a) phototrophic nutrition
- b) mycorrhiza
- c) hydroponics
- d) humus

ANSWER: C -- HYDROPONICS

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Water molecules enter plant epidermal cells by:

- a) osmosis
- b) active transport
- c) translocation
- d) transpiration

ANSWER: A -- OSMOSIS

BIOL-91; Short Answer: What molecule is the energy source for virtually all of the work done by the cell?

ANSWER: ATP (Adenosine Triphosphate)

BIOL-91; Multiple Choice: Which of the following diseases has been eradicate from the world?

- a) cholera
- b) smallpox
- c) diphtheria
- d) poliomyelitis

ANSWER: B -- SMALLPOX

BIOL-91; Multiple Choice: We believe the beginnings of life on earth took place in the:

- a) air
- b) land masses
- c) shallow oceans
- d) glaciers

ANSWER: C -- SHALLOW OCEANS

BIOL-91; Multiple Choice: Each antibody molecule is made up of how many PAIR of polypeptide chains, joined together by disulfide bonds.

- a) 1
- b) 2
- c) 3
- d) 4

ANSWER: B -- 2

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The immune system normally discriminates between which types of antigens.

- a) B and T cells
- b) self and non-self
- c) humoral and cell-mediated
- d) primary and secondary

ANSWER: B -- SELF AND NON-SELF

BIOL-91; Short Answer: Proteins that cause reactions to proceed more rapidly and lower the energy of activation are called.

ANSWER: ENZYMES

BIOL-91; Multiple Choice: What percent of the total radiant energy received by a plant is converted to chemical energy?

- a) less than 2
- b) 10
- c) 50
- d) 75

ANSWER: A -- LESS THAN 2

BIOL-91; Multiple Choice: Genes are able to control a cell's fate by determining the synthesis of:

- a) other genes
- b) enzymes
- c) carbohydrates
- d) fat

ANSWER: B -- ENZYMES

BIOL-91; Multiple Choice: Resolution by any microscope is ULTIMATELY limited by the:

- a) curvature of the lenses
- b) wavelength of the light
- c) light intensity
- d) lens aberrations

ANSWER: B -- WAVELENGTH OF THE LIGHT



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Humans cannot digest cellulose because:

- a) it does not contain sugars
- b) it is made up of disaccharides
- c) it is made up of monosaccharides
- d) humans lack the proper enzymes

ANSWER: D -- HUMANS LACK THE PROPER ENZYMES

BIOL-91; Multiple Choice: Cholesterol, testosterone, and estrogen are all examples of:

- a) proteins
- b) steroids
- c) nucleic acids
- d) alcohols

ANSWER: B -- STEROIDS

BIOL-91; Short Answer: What is sometimes called animal starch?

ANSWER: GLYCOGEN

BIOL-91; Short Answer: How many PAIRS of nerves leave the vertebrate brain?

ANSWER: 12

BIOL-91; Short Answer: The vertebrate eyeball is bounded anteriorly by what convex, transparent object?

ANSWER: CORNEA

BIOL-91; Short Answer: What are the names given to the basic subunits of a nucleic acid.

ANSWER: MONONUCLEOTIDES or NUCLEOTIDES

BIOL-91; Short Answer: What is the term given to enzymes whose action is modulated by binding of a molecule to a site other than the active site?

ANSWER: ALLOSTERIC ENZYMES

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The muscle attachment to the bone of lesser movement is called the muscle's:

- a) insertion
- b) head
- c) origin
- d) tail

ANSWER: C -- ORIGIN

BIOL-91; Short Answer: DNA present in a structural gene that does not seem to have a specific coding function is known as what?

ANSWER: INTRON

BIOL-91; Multiple Choice: The organic portion of bone consists of which one of the following proteins.

- a) fibrin
- b) collagen
- c) actin
- d) myosin

ANSWER: B -- COLLAGEN

BIOL-91; Multiple Choice: Octopus and squid belong to the class of molluscs known as:

- a) cephalopoda (pron: sef-eh-lah-pod-ah)
- b) bivalvia
- c) gastropoda (pron: gas-tro-pod-ah)
- d) polyplacophora (pron: poly-pla-so-for-ah)

ANSWER: A -- CEPHALOPODA

BIOL-91; Short Answer: The name given to a structure present in angiosperms but lacking in gymnosperms is?

ANSWER: OVARY or OVULARY

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: In mammals, the primary function of the loop of Henle is:

- a) reabsorption of water
- b) water secretion
- c) ammonia secretion
- d) bicarbonate reabsorption

ANSWER: A -- REABSORPTION OF WATER

BIOL-91; Short Answer: What is the name of the phenomenon that occurs when tissue culture is infected with one type of virus that causes the culture to resist infection by a second type of virus?

ANSWER: VIRAL INTERFERENCE or INTERFERENCE

BIOL-91; Short Answer: What are gas bubbles which form within plant cells or in blood known as?

ANSWER: EMBOLISM

BIOL-91; Short Answer: What are the water conducting cells in non-flowering vascular plants known as?

ANSWER: TRACHEIDS

BIOL-91; Short Answer: On a dry day, water diffuses out of the intercellular spaces of the leaf through what part of the leaf?

ANSWER: STOMATA

BIOL-91; Short Answer: A clogging of the bile duct interferes with the digestion of what category of food?

ANSWER: FATS or LIPIDS or FAT SOLUBLE VITAMINS

BIOL-91; Short Answer: What is the name given to the jellylike substance filling the chamber behind the lens of the human eye?

ANSWER: vitreous body    vitreous humor

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: The Erythrocytes of mammals lack what?

ANSWER: nucleus or DNA or chromosomes or mitochondria

BIOL-91; Multiple Choice: The name of the ductless glands which secrete their product into the circulatory system are:

- a) exocrine (pron: ek-seh-kren)
- b) apocrine (pron: ap-eh-kren)
- c) holocrine (pron: hoe-leh-kren)
- d) endocrine (pron: en-deh-kren)

ANSWER: D -- ENDOcrine

BIOL-91; Multiple Choice: In the first stage of photosynthesis, light energy splits water molecules leaving a by-product which is released. This byproduct is:

- a) hydrogen
- b) carbon dioxide
- c) oxygen
- d) methane

ANSWER: C -- oxygen

BIOL-91; Multiple Choice: The bacteria which cause dental cavities in humans break down sugars, releasing what chemical, that causes tooth destruction?

- a) acids
- b) bases
- c) enzymes
- d) monosaccharides

ANSWER: A -- acids

BIOL-91; Multiple Choice: Blood platelets are:

- a) cytoplasmic fragments
- b) free nuclei
- c) a kind of red cell
- d) found only during clot formation

ANSWER: A -- Cytoplasmic fragments

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Oxidation of fats and carbohydrates within a cell would be an example of:

- a) anabolism
- b) catabolism
- c) biosynthesis
- d) none of the above

ANSWER: B -- Catabolism

BIOL-91; Multiple Choice: The muscle which is under involuntary control is:

- a) striated
- b) smooth
- c) skeletal

ANSWER: B -- SMOOTH

BIOL-91; Multiple Choice: The secondary pacemaker of the heart is known as the:

- a) AV node
- b) SA node
- c) Purkinje Bundle
- d) None of the above

ANSWER: A -- AV node

BIOL-91; Multiple Choice: A pyrogen is a substance released during inflammation that aids in causing:

- a) swelling
- b) redness
- c) fever
- d) pain

ANSWER: C -- fever

BIOL-91; ; Multiple Choice: Which of the following living creatures is most likely to have evolved from the trilobite?

- a) millipede
- b) sea star
- c) sea anemone
- d) whelk

ANSWER: A -- millipede

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: A lake which has high nutrient availability is:

- a) oligotrophic (pron: all-i-go-tro-fik)
- b) eutrophic (pron: you-tro-fik)
- c) mesotrophic (pron: mez-eh-tro-fik)

ANSWER: B -- eutropHic

BIOL-91; Multiple Choice: The hormone causing growth of the endometrium (pron: en-doe-me-tree-um) is:

- a) androgen (pron: ann-drah-jen)
- b) leutenizing hormone (pron: lew-ten-I-zing)
- c) estrogen
- d) prolactin

ANSWER: C -- estrogen

BIOL-91; Multiple Choice: Nitrogen fixation is accomplished by:

- a) plants
- b) bacteria
- c) animals
- d) viruses

ANSWER: B -- bacteria

BIOL-91; Multiple Choice: The vesicles formed via the process known as phagocytosis (pron: fag-eh-seh-toe-sis) are called:

- a) lysosomes (pron: lye-sah-somes: some rhymes with homes)
- b) Golgi apparatus
- c) food vacuoles
- d) mitochondria (pron: my-toe-chon-dria)

ANSWER: C -- FOOD VACUOLES

BIOL-91; Multiple Choice: Of the following three substances, which provides the LEAST source of energy for the body?

- a) protein
- b) fats
- c) carbohydrates

ANSWER: A -- proteins

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Type A blood contains isohemagglutinins against which red cells?

- a) type A
- b) type B
- c) type O
- d) type G

ANSWER: A -- type A

BIOL-91; Multiple Choice: Which cell count tends to be elevated when an individual has an allergy or parasitic worms?

- a) red blood cells
- b) erythrocyte
- c) eosinophil (pron: e-o-sin-o-fill)
- d) platelet

ANSWER: C -- eosinophil

BIOL-91; Multiple Choice: Veins tend to have the following except:

- a) valves for unidirectional flow
- b) very elastic walls
- c) thin walls
- d) increasing size toward the heart

ANSWER: B -- very elastic walls

BIOL-91; Multiple Choice: Gallstones are most often the result of:

- a) gallbladder irritation
- b) eating cherries and swallowing the pits
- c) precipitation of cholesterol
- d) accumulated bile pigment

ANSWER: C -- precipitation of cholesterol

BIOL-91; Multiple Choice: The loss of water by plants in the form of vapor is called:

- a) evaporation
- b) transpiration
- c) evapotranspiration
- d) vaporization

ANSWER: C -- evapotranspiration

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Sponges are included in which of the following phyla?

- a) Cnidaria (pron: nid-air-e-ah)
- b) Porifera
- c) Reptilia
- d) Foraminifera (pron: feh-ram-eh-nif-eh-rah)

ANSWER: B -- PORIFERA

BIOL-91; Short Answer: Name the tendon in humans which attaches the gastrocnemius and soleus muscles to the calcaneum or heel bone.

ANSWER: Achilles Tendon

BIOL-91; Short Answer: What is the normal pH of human blood?

ANSWER: 7.4

BIOL-91; Short Answer: Myosin is one of two proteins that make up the myofibrils of striated muscles. Name the other protein.

ANSWER: Actin

BIOL-91; Short Answer: Part of the endocrine system in humans, these two glands are small bodies located at the upper end of each kidney. While these glands perform a variety of functions, two of the most important are (1) control of the body's adjustment to an upright posture, and (2) accommodation of the body to intermittent rather than constant intake of food. Name these glands.

ANSWER: Adrenal Glands

BIOL-91; Short Answer: Name the gelatin-like substance which is prepared from various species of red algae growing in Asiatic waters. The prepared product appears in the form of cakes, coarse granules, long shreds or in thin sheets. It is used extensively alone or in combination with various nutritive substances, as a medium for culturing bacteria and various fungi

ANSWER: Agar-agar or just Agar



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: What is a partial or total loss of memory of a temporary or permanent nature known as?

ANSWER: Amnesia

BIOL-91; Multiple Choice: All of the following are characteristic of amphibians EXCEPT:

- a) moist skin
- b) the absence of scales
- c) metamorphosis
- d) live in salt water

ANSWER: D -- live in salt water

BIOL-91; Short Answer: What term is used to describe the procedure whereby a catheter is inserted into an individual's heart, a radio-opaque medium is injected, and x-ray images are made. The procedure is used to locate where arteries are blocked and the degree to which the blockage has developed.

ANSWER: Angiography or Angiogram

BIOL-91; Multiple Choice: Which of the following joints is formed by the articulation of the tibia, the malleolus of the fibula, and the convex surface of the talus. Is it the:

- a) ankle
- b) knee
- c) elbow
- d) wrist

ANSWER: A -- Ankle

BIOL-91; Multiple Choice: A plant which completes its life cycle, from seed to seed, in a single growing season is known as:

- a) perennial
- b) cyclic
- c) annual
- d) circadian

ANSWER: C -- Annual

## *Science Bowl*

## BIOLOGY

BIOL-91; Multiple Choice: In flowers the terminal part of a stamen, containing the pollen sacs is known as the:

- a) anther
- b) style
- c) filament
- d) pistil

ANSWER: A -- Anther

BIOL-91; Multiple Choice: The process of nuclear reorganization in protozoa in which the nucleus divides, each half undergoes a maturation, and the two persisting functional nuclei reunite is known as:

- a) autogamy
- b) autolysis
- c) autoregression
- d) autotomy

ANSWER: A -- Autogamy

BIOL-91; Multiple Choice: Of the following, which is NOT a bacterial disease? It is:

- a) strep throat
- b) herpes
- c) Bubonic Plague
- d) Diphtheria

ANSWER: B -- herpes

BIOL-91; Multiple Choice: Of the following, which is NOT a viral disease? It is:

- a) Hepatitis
- b) Chicken Pox
- c) Tuberculosis
- d) Rabies

ANSWER: C -- Tuberculosis

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Most of the fungi commonly observed are members of this group of fungi, which includes toadstools, mushrooms and puffballs. This group of fungi is known as:

- a) Phycomycetes (pron: fl-kO-my-seats)
- b) Ascomycetes (pron: as-kO-my-seats)
- c) Basidiomycetes (pron: beh-sid-E-O-my-seats)
- d) Plyocetes (pron: ply-O-seats)

ANSWER: C -- Basidiomycetes

BIOL-91; Multiple Choice: Truffles, morels and the many yeasts which are basic to fermentation processes belong to this group of fungi. These fung are known as:

- a) Phycomycetes
- b) Ascomycetes
- c) Basidiomycetes
- d) Plyocetes

ANSWER: B -- Ascomycetes

BIOL-91; Multiple Choice: Many living organisms exhibit the unique property of producing visible light. What term is used to describe this phenomena?

ANSWER: Bioluminescence or photoluminescence

BIOL-91; Multiple Choice: Many living organisms exhibit the unique property of producing visible light. The compound that is oxidized with subsequent light emission is usually referred to as luciferin. What is the enzyme which catalyzes the reaction known as?

ANSWER: Luciferase

BIOL-91; Multiple Choice: The muscle which RAISES a bird's wing is known as the:

- a) Pectoralis major
- b) pectoralis minor
- c) soleus
- d) gluteus maximus

ANSWER: B -- pectoralis minor

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The adult human of average age and size has approximately how many quarts of blood? Is it:

- a) 4
- b) 6
- c) 8
- d) 10

ANSWER: B -- 6

BIOL-91; Multiple Choice: Once the erythrocytes enter the blood in humans, it is estimated that they have an average lifetime of how many days. Is it:

- a) 10 days
- b) 120 days
- c) 200 days
- d) 360 days

ANSWER: B -- 120 Days

BIOL-91; Multiple Choice: Of the following, which mechanisms are important in the death of erythrocytes (pron: eh-rith-reh-sites) in human blood? Is it

- a) phagocytosis (pron: fag-eh-seh-toe-sis)
- b) hemolysis
- c) mechanical damage
- d) all of the above

ANSWER: D -- all of the above

BIOL-91; Multiple Choice: Surplus red blood cells, needed to meet an emergency, are MAINLY stored in what organ of the human body? Is it the:

- a) pancreas
- b) spleen
- c) liver
- d) kidneys

ANSWER: B -- spleen

## *Science Bowl*

## BIOLOGY

BIOL-91; 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? Is it:

- a) 1 week
- b) 3 weeks
- c) 7 weeks
- d) 21 weeks

ANSWER: C -- 7 weeks

BIOL-91; 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.

ANSWER: Hemoglobin, Hemocyanin, Hemerythrin

BIOL-91 Multiple Choice: The several types of white blood cells are sometime collectively referred to as:

- a) erythrocytes (pron: eh-rith-row-cites)
- b) leukocytes (pron: lew-kah-cites)
- c) erythroblasts (pron: eh-rith-rah-blast)
- d) thrombocytes (pron: throm-bow-cites)

ANSWER: B -- leukocytes

BIOL-91; Multiple Choice: The condition in which there is a DECREASE in the number of white blood cells in humans is known as:

- a) leukocytosis (pron: lew-kO-sigh-toe-sis)
- b) leukopenia (pron: lew-kO-pea-nee-ah)
- c) leukemia (pron: lew-kee-me-ah)
- d) leukohyperia (pron: lew-kO-high-per-e-ah)

ANSWER: B -- leukopenia

BIOL-91; Multiple Choice: The smallest of the FORMED elements of the blood are the:

- a) white cells
- b) red cells
- c) platelets
- d) erythrocytes

ANSWER: C -- platelets

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following statements concerning platelets is INCORRECT. Platelets:

- a) contain DNA
- b) are roughly disk-shaped
- c) have little ability to synthesize proteins
- d) are between 1/2 and 1/3 the diameter of the red cell

ANSWER: A -- contain DNA

BIOL-91; Short Answer: What is the primary function of the platelets in huma blood?

ANSWER: clotting or blocking leaks from blood vessels

BIOL-91; Multiple Choice: When a wound occurs in humans, the platelets in th blood activate a substance which starts the clotting process. The substance which starts the clotting is:

- a) adenosine (pron: ah-den-ah-seen)
- b) histamine
- c) lecithin (pron: less-ah-thin)
- d) thrombin

ANSWER: D -- Thrombin

BIOL-91; Multiple Choice: When looking at the cross section of the human tibia, one finds the RED marrow in the:

- a) medullary cavity
- b) cancellous bone
- c) periosteum
- d) epiphysis

ANSWER: A -- medullary cavity

BIOL-91; Multiple Choice: Lengthening of long bones in humans occurs in a particular area of the bone. This area is called the:

- a) medullary canal
- b) cancellous bone
- c) periosteum (pron: per-E-ahs-tee-em)
- d) epiphysis (pron: eh-pif-eh-sis)

ANSWER: D -- Epiphysis

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The part of the human brain which is an important relay station for the sensory impulses and also is the origin of many of the involuntary acts of the eye such as the narrowing of the pupil in bright light is the:

- a) hypothalamus
- b) midbrain
- c) corpus callosum
- d) cerebellum

ANSWER: B -- Midbrain

BIOL-91; 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:

- a) hypothalamus
- b) midbrain
- c) corpus callosum
- d) cerebellum

ANSWER: A -- hypothalamus

BIOL-91; Multiple Choice: In which cerebral lobes is the speech center located? Is it the:

- a) frontal
- b) parietal
- c) temporal
- d) occipital

ANSWER: A -- frontal

BIOL-91; Multiple Choice: In most axons, the myelin sheath is interrupted at intervals of about 1 millimeter or more. These interruptions are called the:

- a) glial
- b) nodes of Ranvier (pron: ron-vee-ay)
- c) collaterals
- d) nodes of Babinet

ANSWER: B -- Nodes of Ranvier

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: Mosses and liverworts comprise this subdivision of plants. Name this plant subdivision.

ANSWER: Bryophytes (pron: bry-eh-fites) or Bryophyta

BIOL-91; Short Answer: This disease, caused by infection with the gram-negative *Yersinia pestis*, is transmitted by fleas from rats to humans. What is the more common name for this disease?

ANSWER: Bubonic Plague or Black Death

BIOL-91; Short Answer: In the mammalian body, this element plays many important roles. Try to identify this element with the fewest number of clues. This element is required to insure the integrity and permeability of cell membranes, to regulate nerve and muscle excitability, to help maintain normal muscular contraction, and to assure cardiac rhythmicity. It also plays an essential role in several of the enzymatic steps involved in blood coagulation and is the most important element of bone salt. Name this element.

ANSWER: Calcium

BIOL-91; Multiple Choice: What eight-letter name starting with the letter "O" is given to that branch of medical science concerned with the study of tumors?

ANSWER: Oncology

BIOL-91; Short Answer: In the more highly developed animals, such as humans, this gas is used to regulate the activity of the heart, the blood vessels, and the respiratory system. WORKING MUSCLES PRODUCE A LARGE AMOUNT OF THIS SUBSTANCE. Narcosis due to this gas is characterized by mental disturbances which can include confusion, headache, low blood pressure, and hypothermia. Name this gas.

ANSWER: Carbon Dioxide or CO<sub>2</sub>

BIOL-91; Multiple Choice: Cariology is the study of the:

- a) human heart
- b) tooth decay
- c) kidneys
- d) liver

ANSWER: B -- Tooth Decay



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Various types of cartilage can be found in the huma BIOL-91; Short Answer: The larval form of butterflies and moths is more commonly known as what?

ANSWER: caterpillar

BIOL-91 Short Answer: Name the sac-like, blind pouch of the large intestine, situated below the level of the junction of the small intestine into the side of the large intestine. At the lower portion of this pouch one finds the appendix.

ANSWER: Cecum or Caecum

BIOL-91; Multiple Choice: During the final stage of cell division, the mitotic apparatus disappears, the chromosomes become attenuated, the centrioles duplicate and split, the nuclear membrane becomes reconstituted and the nucleolus reappears. This phase of cell division is known as:

- a) prophase (pron: prO-phase)
- b) metaphase
- c) anaphase
- d) telophase

ANSWER: D -- Telophase

BIOL-91; Multiple Choice: In cell division, the phase following the metaphas is known as:

- a) prophase
- b) anaphase
- c) telophase
- d) extophase

ANSWER: B -- Anaphase

BIOL-91; Short Answer: All cells of an organism find their lineage from a single fertilized cell. This single fertilized cell is called what?

ANSWER: Zygote

BIOL-91; Multiple Choice: Name the clear watery liquid that surrounds the brain and spinal cord and fills the four cavities or ventricles of the brain.

ANSWER: Cerebrospinal Fluid

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The order of insects which includes beetles is known as:

- a) Coleoptera (pron: kO-lee-op-teh-rah)
- b) Orthoptera (pron: or-tho-op-teh-rah)
- c) Hymenoptera (pron: high-meh-nop-teh-rah)
- d) Diptera (pron: dip-teh-rah)

ANSWER: A -- Coleoptera

BIOL-91; 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. Is this material:

- a) elastin
- b) collagen
- c) fatty acids
- d) keratin

ANSWER: B -- collagen

BIOL-91; Multiple Choice: Sickle cell anemia and Huntington's chorea are both:

- a) virus-related diseases
- b) bacteria-related diseases
- c) congenital disorders
- d) none of the above

ANSWER: C -- Congenital Disorders

BIOL-91; Multiple Choice: In most species of Paramecium there are how many contractile vacuoles? Is it:

- a) one
- b) two
- c) three
- d) four

ANSWER: B -- Two

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The major fibrous proteins are:

- a) peptone and edestin
- b) glutelin and leucine
- c) valine and lysine
- d) myosin and actin

ANSWER: D -- Myosin and Actin

BIOL-91; Short Answer: Name the outer portion of a stem or root, bounded externally by the epidermis, and internally by the cells of the pericycle.

ANSWER: Cortex

BIOL-91; Multiple Choice: Costal cartilage:

- a) attach the ribs to the sternum
- b) cover the ends of the femur
- c) is found in the pinna of the ear
- d) forms the intervertebral disks of the backbone

ANSWER: A -- Attach the ribs to the sternum

BIOL-91; Multiple Choice: From which grandparent or grandparents did you inherit your mitochondria (pron: my-toe-chon-dria)? Is it your:

- a) mother's parents
- b) paternal grandfather
- c) grand mothers
- d) maternal grandmother

ANSWER: D -- maternal grandmother

BIOL-91; Multiple Choice: Which of the following are NOT part of a neuron?

- a) synapse
- b) axon
- c) Nissl bodies
- d) dendrite

ANSWER: A -- SYNAPSE

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The resting potential of a neuron is dependent on what two ions?

- a) lead and calcium ions
- b) calcium and phosphate ions
- c) sodium and potassium ions
- d) potassium and phosphate ions

ANSWER: C -- sodium and potassium ions

BIOL-91; Multiple Choice: Which of the following is NOT a type of neuron?

- a) sensory
- b) motor
- c) association
- d) stimulatory

ANSWER: D -- STIMULATORY

BIOL-91; Multiple Choice: Melatonin (pron: mel-eh-toe-nin) is produced by the:

- a) skin
- b) pineal gland
- c) liver
- d) pituitary gland

ANSWER: B -- PINEAL GLAND

BIOL-91; Multiple Choice: Which of the following statements is TRUE of insulin? Is it:

- a) secreted by the pancreas
- b) a protein
- c) involved in the metabolism of glucose
- d) all of the above

ANSWER: D -- ALL OF THE ABOVE

BIOL-91; Multiple Choice: Select the hormone INCORRECTLY paired with its target.

- a) TSH - thyroid gland
- b) ACTH - anterior pituitary
- c) LH - ovary or testis
- d) MSH - melanocytes (pron: meh-lan-o-cite)

ANSWER: D -- MSH - MELANOCYTES

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following tissues secrete hormones?

- a) pancreas
- b) ovaries
- c) gastro-intestinal tract
- d) all of the above

ANSWER: D -- ALL OF THE ABOVE

BIOL-91; Multiple Choice: Which of the following structures is directly attached to the ovary?

- a) oviduct
- b) uterus
- c) suspensory ligaments
- d) vagina

ANSWER: C -- SUSPENSORY LIGAMENTS

BIOL-91; Multiple Choice: Fertilization of the ovum by the sperm usually occurs in the:

- a) oviduct
- b) vagina
- c) uterus
- d) ovary

ANSWER: A -- OVIDUCT

BIOL-91; Multiple Choice: The corpus luteum secretes:

- a) HCG
- b) LH
- c) FSH
- d) progesterone

ANSWER: D -- PROGESTERONE

BIOL-91; Multiple Choice: Which of the following does sperm NOT travel through?

- a) ureter
- b) urethra
- c) vas deferens
- d) epididymus

ANSWER: A -- URETER

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The placenta in humans is derived from the:

- a) embryo only
- b) uterus only
- c) endometrium and embryo
- d) none of the above

ANSWER: C -- ENDOMETRIUM AND EMBRYO

BIOL-91; Multiple Choice: The number of mature gametes resulting from meiosis in the female is:

- a) 1
- b) 2
- c) 3
- d) 4

ANSWER: A -- 1

BIOL-91; Multiple Choice: Synapsis and crossing over of chromosomes occurs in which phases of meiosis?

- a) Interphase
- b) Prophase
- c) Metaphase
- d) Telephase

ANSWER: B -- PROPHASE

BIOL-91; Multiple Choice: A layer of dead skin cells is found in the:

- a) subcutaneous tissue
- b) dermis
- c) epidermis
- d) no dead cells are in the skin

ANSWER: C -- EPIDERMIS

BIOL-91; Multiple Choice: Glial (pron: glee-el) cells are found in the:

- a) muscular system
- b) digestive system
- c) endocrine system (pron: en-de-kren)
- d) nervous system

ANSWER: D -- NERVOUS SYSTEM

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Myelin sheaths are found:

- a) surrounding tendons
- b) covering the brain
- c) covering muscles
- d) around axons of neurons

ANSWER: D -- AROUND AXONS OF NEURONS

BIOL-91; Multiple Choice: Which of the following is an INCORRECT statement about the parasympathetic system?

- a) It increases digestive action.
- b) It is the fight or flight system.
- c) slows breathing rate
- d) establishes resting state

ANSWER: B -- IT IS THE FIGHT OR FLIGHT SYSTEM.

BIOL-91; Multiple Choice: Which of the following is NOT a component of the human axial skeleton?

- a) sternum
- b) vertebral column
- c) tarsals
- d) skull

ANSWER: C -- TARSALS

BIOL-91; Multiple Choice: Phalanges are found in the:

- a) feet
- b) skull
- c) hip
- d) chest

ANSWER: A -- FEET

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The phase of contraction of a muscle occurs when:

- a) tropomyosin binds and releases actin
- b) myosin binds and releases actin
- c) actin binds and releases myosin
- d) none of the above

ANSWER: B -- MYOSIN BINDS AND RELEASES ACTIN

BIOL-91; Multiple Choice: Select the INCORRECT statement concerning the muscular system.

- a) Bones contact other bones at joints.
- b) Flexors decrease the angle of a joint.
- c) Adductors move a limb away from the midline.
- d) Tendons attach muscle to bone.

ANSWER: C -- ADDUCTORS MOVE A LIMB AWAY FROM THE MIDLINE.

BIOL-91; Multiple Choice: Which type of muscle is a syncytium (pron: sin-sish-E-um)?

- a) skeletal
- b) cardiac
- c) smooth
- d) all of the above

ANSWER: A -- SKELETAL

BIOL-91; Multiple Choice: When the potential difference across a membrane of a neuron equals the threshold, what results?

- a) movement of the membrane
- b) action potential
- c) relaxation
- d) contraction

ANSWER: B -- ACTION POTENTIAL

BIOL-91; Multiple Choice: What ions determine the resting potential of a nerve?

- a) sodium and calcium
- b) calcium and copper
- c) potassium and calcium
- d) sodium and potassium

ANSWER: D -- SODIUM AND POTASSIUM



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which structure does NOT play a part in the motion of cells?

- a) microvilli
- b) cilia
- c) flagella
- d) pseudopodia

ANSWER: A -- MICROVILLI

BIOL-91; Multiple Choice: Bacteriophage (pron: back-teer-e-o-faj) are:

- a) bacteria
- b) bacteria precursors
- c) viruses
- d) agents which cause the production of bacteria

ANSWER: C -- VIRUSES

BIOL-91; Multiple Choice: Which of the following is NOT a mode of genetic exchange within a bacterial population?

- a) conjugation
- b) transduction
- c) transformation
- d) translation

ANSWER: D -- TRANSLATION

BIOL-91; Multiple Choice: The blastula develops into the:

- a) gastrula
- b) morula
- c) endoderm
- d) zygote

ANSWER: A -- GASTRULA

BIOL-91; Multiple Choice: Tissue differentiation begins at which stage?

- a) zygote
- b) morula
- c) blastula
- d) gastrula

ANSWER: D -- GASTRULA

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The nervous system develops from which germ layer?

- a) ectoderm
- b) mesoderm
- c) endoderm
- d) none of the above

ANSWER: A -- ECTODERM

BIOL-91; Multiple Choice: During inspiration, the diaphragm moves:

- a) down by contraction
- b) down by relaxation
- c) up by contraction
- d) up by relaxation

ANSWER: A -- DOWN BY CONTRACTION

BIOL-91; Multiple Choice: The valve between the right ventricle and the pulmonary artery is the:

- a) mitral valve
- b) semilunar valve
- c) bicuspid valve
- d) tricuspid valve

ANSWER: B -- SEMILUNAR VALVE

BIOL-91; Multiple Choice: Which of the following is NOT a function of the kidney?

- a) excretion of urea
- b) regulation of fluids and electrolytes
- c) elimination of toxic substances
- d) defecation

ANSWER: D -- DEFECATION

BIOL-91; Multiple Choice: When CO<sub>2</sub> (carbon dioxide) is dissolved in water, it yields a solution that:

- a) has acidic properties
- b) has basic properties
- c) is neutral

ANSWER: A -- HAS ACIDIC PROPERTIES

BIOL-91; Multiple Choice: Digestion of carbohydrates begins where?

## ***Science Bowl***

## **BIOLOGY**

- a) small intestines
- b) colon
- c) mouth
- d) stomach

ANSWER: C -- MOUTH

BIOL-91; Multiple Choice: Digestion of PROTEINS begins in which of the following human organs?

- a) small intestines
- b) colon
- c) mouth
- d) stomach

ANSWER: D -- STOMACH

BIOL-91; Multiple Choice: Bile has what function in digestion?

- a) emulsify lipids
- b) digest proteins
- c) gluconeogenesis (pron: glue-ko-nee-o-gen-e-sis)
- d) digest carbohydrates

ANSWER: A -- EMULSIFY LIPIDS

BIOL-91; Multiple Choice: Of the following, which is a basic need of all living things?

- a) oxygen gas
- b) light
- c) hydrogen gas
- d) water

ANSWER: D -- WATER

BIOL-91; Multiple Choice: A botanist is most likely to study:

- a) Monerans
- b) Protistans (pron: pro-tis-tans)
- c) Fungi
- d) Virions

ANSWER: C -- FUNGI

BIOL-91; Multiple Choice: A virus must do what to reproduce?

## ***Science Bowl***

## **BIOLOGY**

- a) form a latent virus
- b) undergo transformation
- c) infect a cell
- d) conjugate

ANSWER: C -- INFECT A CELL

BIOL-91; Multiple Choice: The chromosomes of a eukaryotic cell are located i the:

- a) mitochondria (pron: my-toe-kon-dria)
- b) nucleus
- c) ribosome
- d) endoplasma

ANSWER: B -- NUCLEUS

BIOL-91; Multiple Choice: Which of the following is an example of symbiosis?

- a) lichen
- b) slime mold
- c) amoeba
- d) moss

ANSWER: A -- LICHEN

BIOL-91; Multiple Choice: Oxygen enters the body of a grasshopper through:

- a) gills
- b) spinnerets
- c) spiracles
- d) book lungs

ANSWER: C -- SPIRACLES

BIOL-91; Multiple Choice: A heart with a single atrium and single ventricle is a characteristic of adult:

- a) amphibians
- b) arthropods
- c) birds
- d) fish

ANSWER: D -- FISH

BIOL-91; Short Answer: This organ is a thick multi-layered structure which i richly endowed

## ***Science Bowl***

## **BIOLOGY**

with blood vessels. It is also the largest organ of the BIOL-91; Short Answer: Name the four main excretory organs identified in man

ANSWER: SKIN, KIDNEYS, LUNGS, INTESTINAL TRACT

BIOL-91; Multiple Choice: The physical appearance and properties of an organism which is the expression of the genetic makeup is called the:

- a) phenotype
- b) pangenesis
- c) parental trait
- d) genotype

ANSWER: A -- PHENOTYPE

BIOL-91; Short Answer: How many nucleotides make up a codon (pron: kO-don)?

ANSWER: 3

BIOL-91; Multiple Choice: The complex of sugar polymers and proteins which are patchily distributed on the plasma membranes of animal cells is called

- a) cellulose
- b) chitin
- c) glyocalyx
- d) cytoskeleton

ANSWER: C -- GLYOCALYX

BIOL-91; Short Answer: During cellular respiration, glucose is oxidized completely to what two compounds?

ANSWER: CO<sub>2</sub> (CARBON DIOXIDE) AND H<sub>2</sub>O (WATER)

BIOL-91; Multiple Choice: Organisms with cells containing two sets of parental chromosomes are called:

- a) diploid
- b) bisomal
- c) haploid
- d) autosomal

ANSWER: A -- DIPLOID

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The type of gene interaction in which the effects of one gene override or mask the effects of other entirely different genes is called:

- a) linkage
- b) mutation
- c) pleiotropy (pron: ply-ah-tropy)
- d) epistasis (pron: eh-pis-te-sis)

ANSWER: D -- EPISTASIS

BIOL-91; Multiple Choice: For which of the following creatures is fat the greatest percentage of body weight?

- a) termite
- b) blue whale
- c) zebra
- d) female lion

ANSWER: B -- BLUE WHALE

BIOL-91; Multiple Choice: Which is false regarding freshwater fish?

- a) their blood is hypertonic to their environment
- b) they often actively take up salt
- c) they excrete urine hypotonic to the blood
- d) their gills actively excrete salts

ANSWER: D -- THEIR GILLS ACTIVELY EXCRETE SALTS

BIOL-91; Multiple Choice: Neutral fats, oils and waxes may be classified as:

- a) lipids
- b) carbohydrates
- c) proteins
- d) none of the above

ANSWER: A -- LIPIDS

BIOL-91; Short Answer: Name three basic morphologies of bacteria.

ANSWER: (1) COCCI (COCCUS), (2) BACILLI (BACILLUS) or ROD,  
(3) SPIROCHETES or SPIRILLA or SPIRAL

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: What is the name of the 6 carbon monosaccharide that is the universal cellular fuel of plants and animals?

ANSWER: GLUCOSE (DEXTROSE)

BIOL-91; Multiple Choice: During which phase of the cell cycle are normal components of the cell synthesized and assembled?

- a) the M phase
- b) the G1 phase
- c) the S phase
- d) the G2 phase

ANSWER: B -- THE G1 PHASE

BIOL-91; Multiple Choice: Which of the following is NOT a characteristic shared by most of the members of the kingdom plantae?

- a) they are multicellular
- b) they are nonmotile
- c) they possess bilateral symmetry
- d) there is an alternation of haploid and diploid generations

ANSWER: C -- THEY POSSESS BILATERAL SYMMETRY

BIOL-91; Short Answer: Name THREE types of muscle tissue found in the human BIOL-91; Short Answer: If an individual has two dissimilar alleles for a trait, with regard to that trait he is said to be:

ANSWER: HETEROZYGOUS

BIOL-91; Short Answer: How many chromosomes per cell does a Down's Syndrome (trisomy 21) victim have?

ANSWER: 47

BIOL-91; 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?

ANSWER: 50%

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: The monomers from which proteins are built are called

ANSWER: AMINO ACIDS

BIOL-91; Short Answer: The polysaccharide which is the primary energy storage material in plants is:

ANSWER: STARCH

BIOL-91; Multiple Choice: The major divisions of behavior are:

- a) reflex and conditioning
- b) innate and learned
- c) habituation and trial and error
- d) taxis and biorhythm

ANSWER: B -- INNATE AND LEARNED

BIOL-91; Multiple Choice: Motivation:

- a) is not dependent upon the internal physiological state.
- b) is not required for innate behavior.
- c) is required for learned behavior.
- d) all of these

ANSWER: C -- IS REQUIRED FOR LEARNED BEHAVIOR.

BIOL-91; Multiple Choice: Innate behavior differs from learned behavior by the former being:

- a) highly modifiable by external factors.
- b) slightly modifiable by external factors.
- c) totally modifiable by external factors.
- d) completely immovable

ANSWER: B -- SLIGHTLY MODIFIABLE BY EXTERNAL FACTORS.

BIOL-91; Multiple Choice: Which of the following is NOT a type of learned behavior?

- a) habituation
- b) fixed action patterns
- c) conditioning
- d) imprinting

ANSWER: B -- FIXED ACTION PATTERNS



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following is NOT a type of intraspecific competition?

- a) territoriality
- b) mutualism
- c) hierarchies
- d) pecking orders

ANSWER: B -- MUTUALISM

BIOL-91; Multiple Choice: "Two different species cannot occupy the same niche for long" is a statement of the:

- a) Hardy-Weinberg Law
- b) Darwin's Theory of Natural Selection
- c) Competitive Exclusion Principle
- d) Einstein's Theory of Relativity

ANSWER: C -- COMPETITIVE EXCLUSION PRINCIPLE

BIOL-91; Multiple Choice: Parasitism at its extremes is similar to:

- a) commensalism and mutualism
- b) predation and mutualism
- c) mutualism and habituation
- d) commensalism and predation

ANSWER: D -- COMMENSALISM AND PREDATION

BIOL-91; Multiple Choice: Functions of territoriality are:

- a) spacing members of a species.
- b) decreasing competition among members of a species.
- c) increasing social stability of a species.
- d) all of the above

ANSWER: D -- ALL OF THE ABOVE

BIOL-91; Multiple Choice: Homozygous refers to:

- a) similar types of chromosomes
- b) having similar functions on an evolutionary basis
- c) particles in solution that are inseparable
- d) having identical alleles for a given gene

ANSWER: D -- HAVING IDENTICAL ALLELES FOR A GIVEN GENE

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following is NOT a component of chromosomes?

- a) histones
- b) non-histone proteins
- c) DNA
- d) RNA

ANSWER: D -- RNA

BIOL-91; Multiple Choice: Cell membranes are composed of:

- a) proteins
- b) plasmids
- c) nucleopores
- d) lysosomes

ANSWER: A -- PROTEINS

BIOL-91; Multiple Choice: Between the layers of phospholipids in a cell membrane, there is an area that is:

- a) hydrophobic (pron: high-dro-fo-bick)
- b) hydrophilic (pron: high-dro-fill-ick)
- c) hygroscopic (pron: high-grow-scop-ick)
- d) hygrolipic (pron: high-grow-lip-ick)

ANSWER: A -- HYDROPHOBIC

BIOL-91; Multiple Choice: The random movement of particles in solution toward a uniform distribution is termed:

- a) osmosis
- b) repulsion
- c) diffusion
- d) facilitated diffusion

ANSWER: C -- DIFFUSION

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: In osmosis the flow of SOLVENT moves in what direction of tonicity?

- a) isotonic to hypotonic
- b) hypotonic to hypertonic
- c) hypertonic to isotonic
- d) hypertonic to hypotonic

ANSWER: B -- HYPOTONIC TO HYPERTONIC

BIOL-91; Multiple Choice: If a red blood cell is placed in a hypotonic solution, it:

- a) swells
- b) shrinks
- c) crenates
- d) remains the same

ANSWER: A -- SWELLS

BIOL-91; Multiple Choice: Substances insoluble in a membrane are carried across the membrane with the concentration gradient by means of a carrier molecule in a process known as:

- a) osmosis.
- b) diffusion.
- c) active transport.
- d) facilitated diffusion.

ANSWER: D -- FACILITATED DIFFUSION.

BIOL-91; Short Answer: The process of moving molecules against an electro-chemical gradient is:

ANSWER: ACTIVE TRANSPORT

BIOL-91; Multiple Choice: Invagination by a cell membrane forming a vesicle around a solid particle is a:

- a) lysosome
- b) phagocytosis (pron: fag-o-sigh-toe-sis)
- c) pinocytosis (pron: pin-o-sigh-toe-sis)
- d) peroxisomes (pron: pay-rak-se-som)

ANSWER: B -- PHAGOCYTOSIS

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: Which organelle is referred to as "the Power House of the cell"?

ANSWER: MITOCHONDRIA

BIOL-91; Multiple Choice: The difference between smooth and rough endoplasmic reticulum is the lack of:

- a) ATP
- b) proteins
- c) ribosomes
- d) peroxisomes

ANSWER: C -- RIBOSOMES

BIOL-91; Multiple Choice: Which organelle has been shown to contain DNA?

- a) Ribosome
- b) Mitochondria
- c) Golgi Apparatus
- d) none of the above

ANSWER: B -- MITOCHONDRIA

BIOL-91; Multiple Choice: The chloroplast carries out:

- a) photosynthesis
- b) reproduction
- c) secretion
- d) packaging

ANSWER: A -- PHOTOSYNTHESIS

BIOL-91; Short Answer: What phylum do insects belong to?

ANSWER: ARTHROPODA (pron: are-throw-po-da)

BIOL-91; Short Answer: If two brown haired parents, with recessive genes for blonde hair, have children, what are the chances of them having a blonde baby?

ANSWER: 25%

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: What is the formal name for the heaviest muscle in the human body, and helps extend the thigh?

ANSWER: GLUTEUS MAXIMUS

BIOL-91; Short Answer: Protozoans living within the digestive tract of a termite and digesting the cellulose the termite takes in is an example of what?

ANSWER: MUTUALISM

BIOL-91; Short Answer: The development of an egg without fertilization by a sperm is referred to as:

ANSWER: PARTHENOGENESIS

BIOL-91; Multiple Choice: Which of the following blood types is referred to as the universal RECIPIENT?

- a) A
- b) AB
- c) O
- d) B

ANSWER: B -- AB

BIOL-91; Short Answer: What term beginning with the letter O is used to describe cancer-causing genes originally derived from animal or plant cells?

ANSWER: ONCOGENES

BIOL-91; Multiple Choice: Exchange of oxygen, carbon dioxide, nutrients and waste products from mother to fetus occurs through diffusion across the:

- a) chorionic villi (pron: core-e-on-ick villi)
- b) endometrium
- c) corpus luteum
- d) colostrum

ANSWER: A -- CHORIONIC VILLI

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Which of the following is NOT hormone associated with male reproductive physiology:

- a) testosterone
- b) prolactin
- c) interstitial hormone
- d) follicle-stimulating hormone

ANSWER: B -- PROLACTIN

BIOL-91; Short Answer: A codon consists of three nucleotides. There are four possible nucleotides, each of which has an equal probability of being in any one of the three spots. How many possible codons exist?

ANSWER: 64

BIOL-91; Multiple Choice: Genetic elements that can replicate independently of the cell's chromosomes are called:

- a) clones
- b) episomes
- c) repressors
- d) promoters

ANSWER: B -- EPISOMES

BIOL-91; Multiple Choice: Humans can produce energy by:

- a) anaerobic respiration
- b) aerobic respiration
- c) neither anaerobic nor aerobic respiration
- d) both anaerobic and aerobic respiration

ANSWER: D -- BOTH ANAEROBIC AND AEROBIC RESPIRATION

BIOL-91; Short Answer: What is the final product of glycolysis?

ANSWER: PYRUVATE or PYRUVIC ACID

BIOL-91; Short Answer: Gluconeogenesis (pron: glue-ko-nee-o-gen-e-sis) occur in which organ?

ANSWER: LIVER

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: Name a pyrimidine (pron: pie-rim-eh-den) base.

ANSWER: THYMINE or CYTOSINE or URACIL

BIOL-91; Short Answer: Adenine binds to which base in an RNA molecule?

ANSWER: URACIL

BIOL-91; Short Answer: What element carries the oxygen in hemoglobin?

ANSWER: IRON

BIOL-91; Short Answer: What is the last phase of mitosis?

ANSWER: TELOPHASE

BIOL-91; Multiple Choice: Approximately how many different types of cells make up the human body?

- a) 200
- b) 100
- c) 80
- d) 50

ANSWER: A -- 200

BIOL-91; Short Answer: In a seed, what structure contains a food supply for plant growth?

ANSWER: COTYLEDON (pron: cot-el-ed-on)

BIOL-91; Short Answer: All bacteria belong to which kingdom?

ANSWER: MONERA

BIOL-91; Multiple Choice: An aggregate fruit is best represented by:

- a) tomatoes
- b) raspberries
- c) plums
- d) pears

ANSWER: B -- RASPBERRIES

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: Spiders are members of what class?

- a) Diplopoda (pron: dip-low-poe-da)
- b) Insecta
- c) Chilopoda (pron: Ki-low-poe-da)
- d) Arachnida (pron: a-rak-ne-da)

ANSWER: D -- ARACHNIDA

BIOL-91; Short Answer: What is the agricultural importance of legume crops?

ANSWER: Able to fix nitrogen or with bacteria can fix nitrogen

BIOL-91; Multiple Choice: What vascular tissue brings water and minerals to the leaves?

- a) phloem (pron: flow-em)
- b) xylem
- c) cambium
- d) rhizomes (pron: rye-zom)

ANSWER: B -- XYLEM

BIOL-91; Short Answer: In what organ in the human body would you find the glomerulus, Bowman's capsule, the loop of Henle and the collecting duct?

ANSWER: KIDNEY

BIOL-91; Short Answer: The maintenance of a relatively constant internal environment despite external fluctuations is known as what process?

ANSWER: HOMEOSTASIS

BIOL-91; Short Answer: Which digestive organ is a storage sac for the greenish fluid called bile?

ANSWER: GALL BLADDER

BIOL-91; Short Answer: Which vitamin is involved in visual pigment formation

ANSWER: VITAMIN A or BETA CAROTENE or CAROTENE



## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: Name the four basic taste sensations detected by humans.

ANSWER: SWEET, SALTY, BITTER AND SOUR

BIOL-91; Multiple Choice: An animal which consumes plant and animal matter is called:

- a) a carnivore
- b) a saprophytic (pron: sap-roe-fit-ick)
- c) an omnivore
- d) an herbivore

ANSWER: C -- AN OMNIVORE

BIOL-91; Short Answer: A term meaning variable body temperature that describes animals which are often referred to as "cold-blooded" is:

ANSWER: POIKILOTHERMIC (pron: po-key-low-ther-mick)

BIOL-91; Short Answer: Animals whose activity peaks at night are called NOCTURNAL. What term is used to describe animals active during the day?

ANSWER: DIURNAL

BIOL-91; Short Answer: What are the two types of photoreceptors in the vertebrate eye called?

ANSWER: RODS and CONES

BIOL-91; Short Answer: A phenomenon in which repeated exposure to an environmental stimulus lessens an animal's responsiveness to it is known as:

ANSWER: HABITUATION

BIOL-91; Short Answer: Protein synthesis occurs in cells on the:

ANSWER: ENDOPLASMIC RETICULUM

BIOL-91; Short Answer: In what organ in the human body is insulin produced?

ANSWER: PANCREAS

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: The name of the plane that bisects the anatomical figure from top to bottom and front to back:

- a) sagittal
- b) medial
- c) coronal
- d) pariental

ANSWER: A -- SAGITTAL

BIOL-91; Multiple Choice: Sharks are:

- a) amphibians
- b) bony fish
- c) cartilaginous fish (pron: kart-el-aj-eh-nes)
- d) reptiles

ANSWER: C -- CARTILAGINOUS FISH

BIOL-91; Multiple Choice: Eggs leave the female bird's body through the:

- a) oviduct
- b) cloaca
- c) syrinx (pron: sir-inks)
- d) urinary tract

ANSWER: B -- CLOACA

BIOL-91; Multiple Choice: Competition for resources between two different species is called:

- a) predation
- b) interspecific competition
- c) intraspecific competition
- d) competitive exclusion

ANSWER: B -- INTERSPECIFIC COMPETITION

BIOL-91; Short Answer: What is the scientific name for the voice box in a human?

ANSWER: LARYNX

BIOL-91; Short Answer: Saliva is secreted into the mouth of humans by three paired glands. Name any two of these three paired glands.

ANSWER: PAROTID, SUBMAXILLARY, AND SUBLINGUAL

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Multiple Choice: What kind of acid is found in ants?

- a) acetic
- b) formic
- c) nitric
- d) glutamic

ANSWER: B -- FORMIC

BIOL-91; Short Answer: Name the type of cell division in which the two resulting cells carry only half the original number of chromosomes.

ANSWER: MEIOSIS (pron: my-o-sis)

BIOL-91; Short Answer: In biological classification, Homo Sapiens (pron: ho-moe say-pee-ens) belongs in which order?

ANSWER: PRIMATE or PRIMATA

BIOL-91; Short Answer: The name Joseph Merrick, subject of "The Elephant Man", is commonly associated with one disorder, though it now seems likely he actually suffered from a different disorder. Name either one of the disorders.

ANSWER: NEUROFIBROMATOSIS or PROTEUS SYNDROME

BIOL-91; Short Answer: Name the genus of which the fossil called "Lucy" is a member.

ANSWER: AUSTRALOPITHECUS

BIOL-91; Short Answer: Down's Syndrome most often results from the presence of a third copy of which chromosome?

ANSWER: CHROMOSOME 21

BIOL-91; Short Answer: What chemical do mammals use for export of excess nitrogen?

ANSWER: UREA

BIOL-91; Short Answer: What chemical do birds use for export of excess nitrogen?

ANSWER: URIC ACID

## ***Science Bowl***

## **BIOLOGY**

BIOL-91; Short Answer: To which biological phylum do the flatworms belong?

ANSWER: PLATYHELMINTHES

BIOL-92; Multiple Choice: Which of the following is an example of striated tissue?

- a) muscle
- b) nervous
- c) epithelial (pron: ep-a-THEE-lee-al)
- d) connective

ANSWER: A -- MUSCLE

BIOL-92; Multiple Choice: Squamous cell tissue is an example of which type of tissue?

- a) muscle
- b) nervous
- c) epithelial (pron: ep-a-THEE-lee-al)
- d) connective

ANSWER: C -- EPITHELIAL

BIOL-92; Multiple Choice: What type of tissue is bone tissue?

- a) muscle
- b) nervous
- c) epithelial (pron: ep-a-THEE-lee-al)
- d) connective

ANSWER: D -- CONNECTIVE

BIOL-92; Multiple Choice: Chemical regulation of the body involves which system:

- a) lymphatic
- b) respiratory
- c) circulatory
- d) nervous
- e) endocrine

ANSWER: E -- ENDOCRINE

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following human digestive enzymes is incorrectly matched to its substrate?

- a) pepsin - protein
- b) trypsin - starch (pron: TRIP-sin)
- c) pancreatic amylase - starch (pron: AM-i-lase)
- d) lipase - fat
- e) maltase - maltose.

ANSWER: B -- TRYPSIN - STARCH

BIOL-92; Multiple Choice: Which of the following statements does NOT apply to arteries when comparing them to veins:

- a) have thick walls
- b) carry blood away from heart
- c) highly elastic walls
- d) have valves.

ANSWER: D -- HAVE VALVES

BIOL-92; Multiple Choice: In general, valves in the circulatory system:

- a) permit blood to circulate rapidly
- b) prevent blood from moving too rapidly
- c) prevent blood from flowing in the wrong direction
- d) stop the circulation whenever necessary

ANSWER: C -- PREVENT BLOOD FROM FLOWING IN THE WRONG DIRECTION

BIOL-92; Multiple Choice: At the end of the ventricular contraction, the maximum arterial pressure is attained, and blood flow is most rapid. This is correctly termed the:

- a) arterial maximum
- b) gluteus maximum
- c) diastolic pressure
- d) systolic pressure

ANSWER: D -- SYSTOLIC PRESSURE

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: What is the name of the blood vessels to the legs?

- a) mesenteric (pron: mez-en-TARE-ik)
- b) coronary
- c) renal
- d) iliac (pron: IL-ee-ak)
- e) hepatic

ANSWER: D -- ILIAC

BIOL-92; Multiple Choice: A chronic disease of the liver in which fat deposits and scar tissue replace normal cells is:

- a) cirrhosis
- b) hepatitis
- c) constipation
- d) vitamin deficiency

ANSWER: A -- CIRRHOSIS

BIOL-92; Multiple Choice: Which of these is specifically responsible for antibody-mediated immunity?

- a) T cells
- b) B cells
- c) platelets
- d) All of the above

ANSWER: B -- B CELLS

BIOL-92; Multiple Choice: The AIDS viruses specifically attack which kind of cell?

- a) B cells
- b) helper T cells
- c) killer T cells
- d) macrophages

ANSWER: B -- HELPER T CELLS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Most of the carbon dioxide picked up by the blood in the tissues:

- a) dissolves in the plasma
- b) unites with hemoglobin
- c) forms microscopic bubbles
- d) diffuses into the alveoli

ANSWER: A -- DISSOLVES IN THE PLASMA

BIOL-92; Multiple Choice: The sodium/potassium pump is primarily responsible for the:

- a) resting potential
- b) action potential
- c) excretion of salts
- d) contraction of muscle fibers

ANSWER: A -- RESTING POTENTIAL

BIOL-92; Multiple Choice: Excess secretion from this gland can cause a person to be thin, hyperactive, always hungry, & irritable.

- a) adrenal cortex
- b) thyroid
- c) anterior pituitary
- d) adrenal medulla

ANSWER: B -- THYROID

BIOL-92; Multiple Choice: Hormones which function in sending chemical signal between two or more individuals are known as:

- a) leucomones
- b) pheromones (pron: fair-oh-moans)
- c) comones

ANSWER: B -- PHEROMONES

BIOL-92; Multiple Choice: Which term would be used to describe an animal which has adapted to a tree-dwelling mode of life?

- a) deciduous (pron: de-SID-you-us)
- b) dendritic
- c) arboreal (pron: ar-BOR-e-al)
- d) sessile (pron: SESS-ile)

ANSWER: C -- ARBOREAL

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which term is used to describe an animal which limits its activity to periods of dim light at dawn and dusk?

- a) diurnal (pron: die-ER-nal)
- b) crepuscular (pron: kri-PUSS-kyule-ar)
- c) vesperal (pron: VESS-per-al)
- d) none of the above

ANSWER: B -- CREPUSCULAR

BIOL-92; Multiple Choice: Exoskeletons DO NOT provide:

- a) sites for muscle attachment
- b) support for the organism
- c) unlimited growth potential
- d) protection of the organism

ANSWER: C -- UNLIMITED GROWTH POTENTIAL

BIOL-92; Multiple Choice: Which of the following describes the type of fruit characterized as a simple, dry, one-seeded indehiscent (pron: in-deh-HISS-ent) fruit with seed attached to one ovary wall at only one point. Is it:

- a) drupe
- b) achene (pron: AY-keen)
- c) glume (pron: gloom)
- d) none of the above

ANSWER: B -- ACHENE

BIOL-92; Short Answer: What scientific name is given to the central organ of the flower, typically consisting of a style, stigma, and ovary?

ANSWER: PISTIL

BIOL-92; Short Answer: In plants, the external group of tissues, from the cambium outward, of a woody stem or root is known as what?

ANSWER: BARK

BIOL-92; Short Answer: What is the carbohydrate which forms the wall of plant cells?

ANSWER: CELLULOSE



## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: In a plant, the layer of persistently meristematic tissue, giving rise to secondary tissues, resulting in growth in diameter is which of the following?

- a) bark
- b) cambium
- c) capsule

ANSWER: B -- CAMBIUM

BIOL-92; Multiple Choice: In studies of trees, one finds just one leaf bud and one leaf at each node on a walnut twig. This arrangement of leaf bud and leaf is known as:

- a) alternate
- b) opposite
- c) whorled
- d) none of the above

ANSWER: A -- ALTERNATE

BIOL-92; Short Answer: Many plants have two leaves directly across from each other at each node, and a bud in the axil of each leaf. Name the term use in plant studies to describe this leaf arrangement.

ANSWER: OPPOSITE

BIOL-92; Multiple Choice: In studies of trees, when three or more leaves and buds occur at each node, leaf arrangement and bud arrangement are said to be:

- a) whorled
- b) opposite
- c) alternate
- d) varying

ANSWER: A -- WHORLED

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Liverworts and mosses are characterized by their lack of vascular conducting tissue. These two groups of plants, liverwort and mosses, are known by which of the following terms:

- a) thallophytes (pron: THAL-o-fights)
- b) gymnosperms (pron: JIM-na-sperms)
- c) bryophytes (pron: BRIE-o-fights)
- d) none of the above

ANSWER: C -- BRYOPHYTES

BIOL-92; Multiple Choice: In studies of plants, which of the following are thallophytes?

- a) bacteria
- b) fungi
- c) algae
- d) all of the above

ANSWER: D -- ALL OF THE ABOVE

BIOL-92; Multiple Choice: The group containing the most primitive living vascular plants has only two living genera. This group is named:

- a) arthropoda
- b) psilophyta
- c) bryophyta

ANSWER: B -- PSILOPHYTA

BIOL-92; Multiple Choice: Thickness and toughness of plant walls are increased by deposition within the original cellulose wall, of a substance known as lignin. The process of deposition is called:

- a) Sclerenchymacia
- b) Lignification
- c) Scleridia

ANSWER: B -- LIGNIFICATION

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following are stems of plants which are leaf like in form, are green, and perform the functions of leaves. In addition, they may bear fruit, flowers, and temporary leaves?

- a) Tubers
- b) rhizomes
- c) cladophylls
- d) none of the above

ANSWER: C -- CLADOPHYLLS

BIOL-92; Multiple Choice: Which of the following scientific terms is used to describe the loss of water vapor by plants. Is it:

- a) digestion
- b) respiration
- c) adsorption
- d) transpiration

ANSWER: D -- TRANSPIRATION

BIOL-92; Multiple Choice: Because they are resistant to desiccation (pron: des-ih-KA-shun), desert plants are known as what?

- a) dehydrates
- b) hydrophobocytes
- c) xerophytes
- d) none of the above

ANSWER: C -- XEROPHYTES

BIOL-92; Multiple Choice: A plant bending toward sunlight is an example of which of the following?

- a) release of energy
- b) metabolism
- c) phototaxis
- d) reproduction

ANSWER: C -- PHOTOTAXIS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following are the most common bryophytes?

- a) ferns
- b) cone-bearing plants
- c) mosses and liverworts
- d) flowering plants

ANSWER: C -- MOSSES AND LIVERWORTS

BIOL-92; Multiple Choice: The tendency of a plant to grow toward light is called:

- a) photosynthesis
- b) photoinduction
- c) phototropism (pron: fo-tot-row-piz-em)
- d) photolysis (pron: fo-tol-eh-sis)

ANSWER: C -- PHOTOTROPISM

BIOL-92; Multiple Choice: Which of the following laws best describes the statement:

The members of an homologous (pron: ho-MOL-eh-gus) pair of genes are separated during meiosis (pron: my-O-sis) of reproductive cells so that each gamete (pron: GAM-eet) contains one of the alleles (pron: a-leels). Is it:

- a) law of segregation
- b) law of independent assortment
- c) law of filial (pron: FILL-ee-al) generation
- d) law of sorting

ANSWER: A -- LAW OF SEGREGATION

BIOL-92; Multiple Choice: Which of the following refers to a cross in which traits are considered simultaneously? Is it:

- a) dihybrid cross
- b) filial cross
- c) punnett cross
- d) none of the above

ANSWER: A -- DIHYBRID CROSS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following terms refers to the frequency with which a gene is expressed in a detectable way? Is it:

- a) polygenetics
- b) codominance
- c) allelism
- d) penetrance

ANSWER: D -- PENETRANCE

BIOL-92; Multiple Choice: Which of the following terms refers to the collection of all alleles of every gene present in the members of a population? Is it:

- a) population expression
- b) gene pool
- c) genetic dictionary
- d) none of these

ANSWER: B -- GENE POOL

BIOL-92; Multiple Choice: Which of the following are capable of causing chromosomal mutations?

- a) hydrogen peroxide
- b) high body temperature
- c) X-rays
- d) all of the above

ANSWER: D -- ALL OF THE ABOVE

BIOL-92; Short Answer: In studies of cells, the nuclei, mitochondria, endoplasmic reticulum, dictyosomes, microbodies and plastids are collectively known as what in the eucaryotic cell?

ANSWER: ORGANELLES

BIOL-92; Multiple Choice: In a cell, the membrane bounding the outer surface of the cytoplasm is known as:

- a) tonoplast
- b) cytoplasm
- c) plasmalemma

ANSWER: C -- PLASMALEMMA

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: The use and transfer of energy in all cells involves the same compound, ATP. The letters ATP stand for the chemical:

- a) atrophine trichloride
- b) aluminum trioxide
- c) adenosine triphosphate
- d) none of the above

ANSWER: C -- ADENOSINE TRIPHOSPHATE

BIOL-92; Short Answer: The letters RNA are used to abbreviate what substance found in chromosomes?

ANSWER: RIBONUCLEIC ACID

BIOL-92; Multiple Choice: Which two of the following four bases in DNA are pyrimidine (pron: pie-rim-eh-den) bases?

- a) cytosine
- b) thymine
- c) adenine
- d) guanine (pron: gwa - neen)

ANSWER: A and B -- CYTOSINE and THYMINE

BIOL-92; Multiple Choice: Which two of the following four bases in DNA are purine bases?

- a) adenine
- b) thymine
- c) cytosine
- d) guanine

ANSWER: A and D -- ADENINE and GUANINE

BIOL-92; Multiple Choice: Peptide bonds are found in:

- a) carbohydrates
- b) lipids
- c) nucleic acids
- d) proteins

ANSWER: D -- PROTEINS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: What is the end product of glycolysis (fermentation) in chordates (pron: KOR-dates) when there is INSUFFICIENT oxygen?

- a) lactic acid
- b) hydrogen
- c) sugar
- d) alcohol

ANSWER: A -- LACTIC ACID

BIOL-92; Multiple Choice: What is the main purpose of fermentation in cells?

- a) production of ATP
- b) hydrolysis of starch
- c) production of alcohol
- d) burning of hydrogen with oxygen

ANSWER: A -- PRODUCTION OF ATP

BIOL-92; Multiple Choice: Schwann's cell theory basically states that:

- a) cells are the building blocks of living things.
- b) cells require oxygen.
- c) cells are made of atoms and molecules.
- d) cells require nutrients.

ANSWER: A -- CELLS ARE THE BUILDING BLOCKS OF LIVING THINGS.

BIOL-92; Short Answer: What is the process by which a cell captures and digests a foreign body?

ANSWER: PHAGOCYTOSIS (pron: fag-a-se-TOE-sis)

BIOL-92; Short Answer: In chlorophyll-containing plants, what are TWO products of green plant photosynthesis?

ANSWER: OXYGEN AND GLUCOSE (accept energy, also)

## *Science Bowl*

## BIOLOGY

BIOL-92; Multiple Choice: Muscle is surrounded by a tough sheet of whitish connective tissue called:

- a) apodeme
- b) annelida
- c) fascia
- d) none of the above

ANSWER: C -- FASCIA

BIOL-92; Multiple Choice: Which of the following is not a function performed by muscle through contraction?

- a) motion
- b) maintenance of posture
- c) hemopoiesis
- d) heat production

ANSWER: C -- HEMOPOIESIS

BIOL-92; Multiple Choice: The most important chemical process in digestion is:

- a) diffusion
- b) active transport
- c) hydrolysis

ANSWER: C -- HYDROLYSIS

BIOL-92; Short Answer: The junction of two neurons is called what?

ANSWER: A SYNAPSE

BIOL-92; Multiple Choice: Which of the following terms is used to describe animals that maintain a constant body temperature by producing heat by metabolic oxidations (muscle contractions) and losing excess heat by evaporative cooling?

- a) poikilotherms
- b) heterotherms
- c) homeotherms
- d) none of these

ANSWER: C -- HOMEOTHERMS



## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Short Answer: What is the process by which an animal may develop from an unfertilized egg?

ANSWER: PARTHENOGENESIS (pron: par-then-a-GEN-a-sis)

BIOL-92; Multiple Choice: A normal female human cell will have how many Barr bodies per cell? Is it:

- a) 1
- b) 2
- c) 3
- d) 4

ANSWER: A -- 1

BIOL-92; Multiple Choice: Which of the following refers to the science concerned with the application of genetic principles to the improvement of the human species?

- a) assortive mating
- b) eugenics
- c) holandricism
- d) none of these

ANSWER: B -- EUGENICS

BIOL-92; Multiple Choice: Which of the following terms relates to the mating of genetically-related individuals ("blood relatives")?

- a) familialism (pron: feh-mil-yel-ism)
- b) kinship genetics
- c) consanguinity (pron: kon-sang-gwin-eh-tee)
- d) none of these

ANSWER: C -- CONSANGUINITY

BIOL-92; Short Answer: Complete the sentence. \_\_\_\_\_ Twins develop from separate zygotes and therefore differ genotypically and phenotypically.

ANSWER: FRATERNAL

BIOL-92; Short Answer: Complete the following sentence. In movable joints in the body, \_\_\_\_\_ connect bone to bone.

ANSWER: LIGAMENTS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: In biological studies which of the following terms is used to refer to muscles with less than normal tone? Is it:

- a) atonic
- b) latent
- c) flaccid
- d) none of these

ANSWER: C -- FLACCID

BIOL-92; Multiple Choice: In biological studies which of the following is used to refer to the oxygen-binding, iron-containing, conjugated protein complex present in the sarcoplasm of muscle cells?

- a) myelin
- b) myosin
- c) myoglobin
- d) none of these

ANSWER: C -- MYOGLOBIN

BIOL-92; Multiple Choice: Which of the following terms is used to describe the formation of fibrous tissue where it normally does not exist? Is it:

- a) fibrositis
- b) fibrogenesis
- c) fibrosis
- d) none of these

ANSWER: C -- FIBROSIS

BIOL-92; Multiple Choice: Which of the following refers to the term -- tracheotomy (pron: tray-key-ot-eh-me)?

- a) an electrical determination of the flow rate of air through the trachea
- b) an incision of the trachea
- c) the removal of the trachea due to gross cancerous tumor formation
- d) none of these

ANSWER: B -- AN INCISION OF THE TRACHEA

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following terms refers to the ease with which a tissue stretches? Is it:

- a) stretch factor
- b) surface tension
- c) compliance
- d) ductility

ANSWER: C -- COMPLIANCE

BIOL-92; Multiple Choice: Which of the following terms is used to describe the study of the factors that influence the flow characteristics of blood as it moves through the body? Is it:

- a) hemodynamics
- b) anginology
- c) capillary physiology
- d) none of these

ANSWER: A -- HEMODYNAMICS

BIOL-92; Multiple Choice: Which of the following terms refers to a deficiency of blood flow into a part of the body? Is it:

- a) intrafusal
- b) ischemia
- c) infarct
- d) none of these

ANSWER: B -- ISCHEMIA

BIOL-92; Multiple Choice: Which of the following terms describes the process by which red blood cells are formed? Is it:

- a) erythroblastosis
- b) erythropoiesis
- c) erythromyacinosis
- d) cardiosis

ANSWER: B -- ERYTHROPOIESIS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following is a term for mononuclear, granulocytic white blood cells that produce immunoglobulins?

- a) lymphocytes
- b) platelets
- c) erythrocytes (pron: eh-rith-reh-sites)
- d) none of these

ANSWER: A -- LYMPHOCYTES

BIOL-92; Multiple Choice: Which of the following is also called "cancer of the blood" -- an uncontrolled, greatly accelerated production of white cells. Is it:

- a) polycythemia
- b) leukemia
- c) sickle-cell anemia
- d) none of these

ANSWER: B -- LEUKEMIA

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms is used to describe a very rapid heart rate or pulse rate? Is it:

- a) bradycardia
- b) tachycardia
- c) cardiosis
- d) myocardia

ANSWER: B -- TACHYCARDIA

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms is used to describe heart muscle? Is it:

- a) myocardium
- b) epicardium
- c) pericardium
- d) tachycardium

ANSWER: A -- MYOCARDIUM

BIOL-92; Short Answer: A person with which blood type was historically known as "the universal donor"?

ANSWER: TYPE O

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: In studies of humans, the term used to describe the act of swallowing is:

- a) mastication
- b) deglutition
- c) peristalsis
- d) none of these

ANSWER: B -- DEGLUTITION

BIOL-92; Multiple Choice: Complete the sentence by choosing one of the given biological terms. If an ulcer continues and eventually erodes all the way through the wall of the stomach or duodenum, the condition is called what?

- a) periodontitis
- b) perforation
- c) peritonitis
- d) none of these

ANSWER: B -- PERFORATION

BIOL-92; Multiple Choice: In studying the human body, the instrument which is used to indirectly measure the metabolic rate is a:

- a) respirometer
- b) hydrometer
- c) calorimeter
- d) none of these

ANSWER: A -- RESPIROMETER

BIOL-92; Short Answer: The small intestine is composed of three segments. Two of these segments are the jejunum and the ileum. Name the third segment.

ANSWER: DUODENUM

BIOL-92; Short Answer: The large intestine is composed of two segments. The first is the colon. Name the second segment.

ANSWER: RECTUM

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms would be used to describe the lack of voluntary control of urination or voiding of the bladder? Is it

- a) anuria
- b) suppression
- c) incontinence
- d) none of these

ANSWER: C -- INCONTINENCE

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms is used to describe the hereditary condition associated with an excessively high level of uric acid in the blood?

- a) gout
- b) cystitis
- c) uric ptosis
- d) none of these

ANSWER: A -- GOUT

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms is used to describe the first step in the production of urine? Is it:

- a) tubular secretion
- b) tubular reabsorption
- c) glomerular filtration
- d) none of these

ANSWER: C -- GLOMERULAR FILTRATION

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms is used to describe a severe depletion or deficiency in total body water? Is it:

- a) hydrophobia
- b) hydropenia
- c) hydrolysis
- d) none of these

ANSWER: B -- HYDROPENIA

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following organs of the body produces insulin?

- a) liver
- b) stomach
- c) pancreas
- d) small intestine

ANSWER: C -- PANCREAS

BIOL-92; Multiple Choice: In studies of the human body, which of the following terms can also be used when referring to the pituitary gland? I it:

- a) thymus
- b) hypophysis (pron: hypo-fi-sis)
- c) pancreas
- d) none of the above

ANSWER: B -- HYPOPHYSIS

BIOL-92; Multiple Choice: Which of the following is commonly referred to as the "master gland" because it regulates so many body activities? Is it:

- a) pituitary gland
- b) adrenal gland
- c) thyroid gland
- d) none of these

ANSWER: A -- PITUITARY GLAND

BIOL-92; Short Answer: Which endocrine structure is located in the roof of the third ventricle of the brain and is also called the epiphysis cerebri?

ANSWER: PINEAL GLAND

BIOL-92; Short Answer: What are the two MAIN components of the central nervous system?

ANSWER: BRAIN AND SPINAL CORD.

BIOL-92; Short Answer: What structure attaches the embryo to the placenta?

ANSWER: UMBILICAL CORD

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Short Answer: What is the outer transparent coat of the human eye called?

ANSWER: CORNEA

BIOL-92; Short Answer: Which organ of the body functions to remove old blood cells from circulation?

ANSWER: SPLEEN / LIVER

BIOL-92; Multiple Choice: Which of the following antibacterial substances is known to primarily affect gram-negative bacteria?

- a) spermine (pron: SPER-meen)
- b) interferon (pron: in-ter-FEER-en)
- c) phagocytin (pron: fag-a-SITE-en)
- d) leukins (pron: LEW-kins)

ANSWER: C -- PHAGOCY TIN

BIOL-92; Multiple Choice: Which of the following is the LEAST effective technique used to sterilize?

- a) heat
- b) cold
- c) ethylene oxide (pron: ETH-e-leen)
- d) filtration

ANSWER: B -- COLD

BIOL-92; Short Answer: Antibodies are part of a group of serum (pron: SIR-em) proteins known as what?

ANSWER: IMMUNOGLOBULINS (pron: im-MYOON-o-glob-you-lins) or GLOBULINS

BIOL-92; Short Answer: In 1954, the Public Health Service organized an experiment in which nearly 2 million children in grades 1, 2 and 3 participated. The experiment was to test a vaccine. Name the disease the children were vaccinated against, and identify the individual who developed the vaccine.

ANSWER: POLIO; VACCINE DEVELOPED BY JONAS SALK



## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Short Answer: A monoclonal antibody is specific for how many different proteins?

ANSWER: ONE

BIOL-92; Short Answer: What is the gelatinous substance produced by red algae which is used as a culture medium for bacteria called?

ANSWER: AGAR (pron: OG-er) or AGAR-AGAR (pron: OG-er-OG-er)

BIOL-92; Short Answer: What do we call a substance, usually a protein, which when introduced into the body stimulates the formation of antibodies?

ANSWER: ANTIGEN

BIOL-92; Short Answer: What is the term for an infection in the connective tissues covering the brain and spinal cord?

ANSWER: MENINGITIS

BIOL-92; Short Answer: What is the primary chemical component of the prokaryotic cell wall?

ANSWER: PEPTIDOGLYCAN (pron: pep-ted-o-GLIE-kan)

BIOL-92; Short Answer: The virus which causes mononucleosis belongs to which family?

- a) Cocksackie
- b) Androvirus
- c) Epstein-Barr
- d) Retrovirus

ANSWER: C -- EPSTEIN-BARR

BIOL-92; Short Answer: Zidovudine (pron: zi-DOE-vyu-deen), a nucleoside with antiviral activity, is used to delay the onset of this disease. Name the disease.

ANSWER: AIDS

BIOL-92; Short Answer: Syphilis is commonly detected by what test?

ANSWER: WASSERMAN TEST

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Short Answer: What is the tick-borne disease, caused by *Borrelia burgdorferi*, commonly called?

ANSWER: LYME DISEASE

BIOL-92; Short Answer: Bacteria and blue-green algae are among the few types of these cells, which lack a nuclear membrane. Name this type of cell.

ANSWER: PROCARYOTIC CELL (pron: pro-KARE-ee-o-tik)

BIOL-92; Short Answer: The ratio of which two types of lymphocytes is an indication of the AIDS virus?

ANSWER: TH AND TS CELLS (Thelper and Tsuppressor is also acceptable)

BIOL-92; Short Answer: Name the term which is used to describe the biotic and abiotic components of a particular biological area. A pond or a forest would be examples.

ANSWER: ECOSYSTEM

BIOL-92; Short Answer: What is the term used in ecology to refer to a habitat zone such as a grassland or tundra, resulting from interaction of climate, biota (pron: bi-O-ta), and substratum?

ANSWER: BIOME (pron: BI-owm)

BIOL-92; Multiple Choice: Which term is used to describe organisms which live on or in the bottom of an ocean or lake. Such organisms can be found anywhere from the shoreline to the greatest ocean depths?

- a) biota
- b) benthos
- c) nekton
- d) plankton

ANSWER: B -- BENTHOS

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: Which of the following terms describes the study of animal behavior based on comparisons, the observation of patterns, and the consideration of environmental adaptations? Is it:

- a) ethology (pron: eh-thol-eh-gee)
- b) evisceration (pron: eh-vis-eh-ray-shun)
- c) promotorism
- d) sociology

ANSWER: A -- ETHOLOGY

BIOL-92; Multiple Choice: Which of the following describes the belief that living things can appear from nonliving matter? Is it:

- a) evolution
- b) spontaneous generation
- c) photosynthesis
- d) chemosynthesis

ANSWER: B -- SPONTANEOUS GENERATION

BIOL-92; Short Answer: An organism is named by combining its genus name with what other name?

ANSWER: SPECIES NAME / SPECIFIC EPITHET

BIOL-92; Short Answer: Members of the Kingdom Monera differ from all other organisms because they have what characteristic?

ANSWER: THEY HAVE PROKARYOTIC CELLS / LACK NUCLEUS AND ORGANELLES

BIOL-92; Short Answer: In Biology, which classification category contains the largest number of organisms?

ANSWER: KINGDOM

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Multiple Choice: If we were to completely eliminate one group of marine organisms from the ocean, which would most likely be fatal to marine fish populations? Elimination of:

- a) urchins
- b) diatoms (pron: DIE-a-toms)
- c) starfishes
- d) sea anemones (pron: a-NEM-a-nees)

ANSWER: B -- DIATOMS

BIOL-92; Multiple Choice: From the following, name the type of mimicry by which an acceptable, palatable insect mimics an unfavorable, noxious insect for protection.

- a) Batesian mimicry (pron: BATE-see-an MIM-i-cree)
- b) Mullerian mimicry (pron: myou-LER-ee-an MIM-i-cree)
- c) Femmes fatales strategy (pron: fem fa-TAL)
- d) Monarchial mimicry

ANSWER: B -- MULLERIAN MIMICRY

BIOL-92; Short Answer: In biology, a situation in which one characteristic is NOT dominant over another is known by what name?

ANSWER: INCOMPLETE INHERITANCE

BIOL-92; Short Answer: What is the occurrence of two or more hereditary units on the same chromosome called?

ANSWER: (GENE) LINKAGE

BIOL-92; Short Answer: If the DNA code for leucine is GAT, the tRNA anticodon would be what?

ANSWER: GAU

BIOL-92; Short Answer: Two parents have the genotype Aa. What fraction of their offspring would also be heterozygous?

ANSWER: 1/2

BIOL-92; Short Answer: What term is used to describe an organism lacking one entire chromosome?

ANSWER: A MONOSOMY

## ***Science Bowl***

## **BIOLOGY**

BIOL-92; Short Answer; What type of mutation has occurred when a plant inherits a complete extra set of chromosomes?

ANSWER: POLYPLOIDY

BIOL-92; Short Answer: Carbon 14 with a half life of 5,568 years is used to date a sample of wood. The sample has 1/8 the carbon 14 contained in a living tree of the same species. Approximately how old is the specimen?

ANSWER: 16,704 YEARS

BIOL-92; Short Answer: What is the mass of filaments composing the body of a fungus called?

ANSWER: MYCELIUM

BIOL-92; Short Answer: What kinds of organs are proglottids mostly made of?

ANSWER: REPRODUCTIVE ORGANS

BIOL-92; Short Answer: What is the whale's baleen?

ANSWER: THE STRAINER IN ITS MOUTH

BIOL-92; Multiple Choice: Which disease is NOT caused by a bacteria?

- a) Tetanus
- b) Tuberculosis
- c) Leprosy
- d) AIDS

ANSWER: D -- AIDS

BIOL-92; Short Answer: The purpose of the human genome project is to map all the human chromosomes. A similar project is ongoing for another mammal; name that mammal.

ANSWER: MOUSE (or Mice)

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: In plant studies, many species of angiosperms lack secondary growth and therefore do not become woody. They are generally called by which of the following?

- a) trees
- b) bines
- c) herbs
- d) none of the above

ANSWER: C -- HERBS

BIOL-93; Short Answer: What TWO primary chemical compounds are used in photosynthesis?

ANSWER: WATER AND CARBON DIOXIDE

BIOL-93; Multiple Choice: The ovary of a flowering plant can develop into a:

- a) spore
- b) fruit
- c) cone
- d) seed

ANSWER: B -- FRUIT

BIOL-93; Multiple Choice: The part of the flower that is adapted to catch pollen is the:

- a) stigma
- b) style
- c) anther
- d) ovule

ANSWER: A -- STIGMA

BIOL-93; Multiple Choice: Fungi depend on other organisms for:

- a) water
- b) food
- c) carbon dioxide
- d) hydrogen

ANSWER: B -- FOOD

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Short Answer: What is the generic name for a biocide effective against certain plants?

ANSWER: HERBICIDE

BIOL-93; Multiple Choice: Neuron is the name given to which special type of biological cell?

- a) a nerve cell
- b) a brain cell
- c) a skin cell

ANSWER: A -- A NERVE CELL

BIOL-93; Short Answer: What is the highly insoluble (polysaccharide) carbohydrate which is a major supporting material in plants?

ANSWER: CELLULOSE

BIOL-93; Short Answer: The letters DNA are used to abbreviate what substance found in chromosomes?

ANSWER: DEOXYRIBONUCLEIC ACID

BIOL-93; Multiple Choice: In a cell, aerobic respiration occurs mainly in the:

- a) ribosomes (pron: RIBE-a-somes)
- b) mitochondria (pron: mite-o-KON-dree-a)
- c) Golgi apparatus (pron: GALL-jee)
- d) chloroplasts (pron: KLOR-o-plasts)

ANSWER: B -- MITOCHONDRIA

BIOL-93; Multiple Choice: As mitosis (pron: mie-TOE-sis) begins, the structure in the nucleus that disappears is the:

- a) spindle
- b) nucleolus (pron: new-kee-O-lus)
- c) chromatid (pron: KROME-a-tid)
- d) centromere (pron: SEN-tro-meer)

ANSWER: B -- NUCLEOLUS

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: The process of osmosis is best illustrated by the movement of:

- a) salts in blood stream.
- b) oxygen into red blood cells.
- c) carbon dioxide through stomata.
- d) water into root hair cells.

ANSWER: D -- WATER INTO ROOT HAIR CELLS.

BIOL-93; Multiple Choice: Cilia are distinguished from flagella (pronounced: fla-JEL-a) by their:

- a) arrangement of microtubules.
- b) length and number.
- c) function.
- d) color.

ANSWER: B -- LENGTH AND NUMBER.

BIOL-93; Multiple Choice: Molecular oxygen formed during plant photosynthesis is derived exclusively from:

- a) CO<sub>2</sub>
- b) Water
- c) carbohydrates
- d) none of the above

ANSWER: B -- WATER

BIOL-93; Multiple Choice: In the digestive system, proteins are broken down into:

- a) simple sugars.
- b) fatty acids.
- c) amino acids.
- d) glycerol.

ANSWER: C -- AMINO ACIDS.

BIOL-93; Multiple Choice: Respiration that does NOT require oxygen is called:

- a) photosynthesis
- b) oxidation
- c) anaerobic respiration
- d) aerobic respiration

ANSWER: C -- ANAEROBIC RESPIRATION



## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: The process by which glucose is broken down and carbon dioxide and alcohol are released is:

- a) glycolysis
- b) photosynthesis
- c) respiration
- d) fermentation

ANSWER: D -- FERMENTATION

BIOL-93; Multiple Choice: What controls the steps in the respiration of glucose?

- a) enzymes
- b) rate of photosynthesis
- c) absence of NAD
- d) amount of water present

ANSWER: A -- ENZYMES

BIOL-93; Multiple Choice: What has the most energy in its chemical bonds?

- a) AMP
- b) ADP
- c) ATP
- d) All are equal

ANSWER: C -- ATP

BIOL-93; Multiple Choice: During an early step of respiration, glucose is converted into two identical molecules of:

- a) CO<sub>2</sub>
- b) ATP
- c) pyruvic acid(pron: pie-ROO-vik)
- d) chlorophyll

ANSWER: C -- PYRUVIC ACID

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: When you do strenuous exercise, oxygen is used up rapidly. What substance is formed.

- a) pyruvic acid(pron: pie-ROO-vik)
- b) lactic acid
- c) glucose
- d) alcohol

ANSWER: B -- LACTIC ACID

BIOL-93; Multiple Choice: Which of the following macromolecules is primarily responsible for the insolubility of cell membranes in water?

- a) starch
- b) cellulose
- c) protein
- d) phospholipid

ANSWER: D -- PHOSPHOLIPID

BIOL-93; Multiple Choice: In biological studies, which of the following terms could be used to replace the word dehydration?

- a) encystation
- b) desiccation
- c) hydrolysis
- d) none of these

ANSWER: B -- DESICCATION

BIOL-93; Multiple Choice: Which of the following terms refers to the study of tissues?

- a) physiology
- b) pathology
- c) histology
- d) none of these

ANSWER: C -- HISTOLOGY

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: Which of the following refers to the development of viable individuals from unfertilized eggs?

- a) self-fertilization
- b) hermaphroditic reproduction (pronounced her - MAF - ro - dit - ik)
- c) parthenogenesis

ANSWER: C -- PARTHENOGENESIS

BIOL-93; Multiple Choice: The common energy-storage polysaccharide in animals is:

- a) glycogen
- b) fructose
- c) starch
- d) collagen

ANSWER: A -- GLYCOGEN

BIOL-93; Multiple Choice: Locomotion and heat production are functions of which system?

- a) lymphatic (pron: lim-FAT-ik)
- b) respiratory
- c) skeletal
- d) muscular

ANSWER: D -- MUSCULAR

BIOL-93; Multiple Choice: The pituitary and thyroid glands are components of the:

- a) endocrine system(pron: EN-do-kren)
- b) cardiovascular system
- c) lymphatic system(pron: lim-FAT-ik)
- d) respiratory system

ANSWER: A -- ENDOCRINE SYSTEM

BIOL-93; Multiple Choice: The primary function of carbohydrates is to:

- a) break down molecules.
- b) aid in digestion.
- c) supply the body with energy.
- d) regulate the flow of chyme.

ANSWER: C -- SUPPLY THE BODY WITH ENERGY.

## *Science Bowl*

## BIOLOGY

BIOL-93; Multiple Choice: In a comparison of the brain found in lower classes of vertebrates to the brain in higher classes of vertebrates the area showing most increase in relative size is:

- a) cerebellum
- b) optic lobe
- c) medulla
- d) cerebrum

ANSWER: D -- CEREBRUM

BIOL-93; Multiple Choice: The outer most layer of skin is called the:

- a) endodermis
- b) mesoderm
- c) epidermis
- d) dermis

ANSWER: C -- EPIDERMIS

BIOL-93; Multiple Choice: The major organ in mammals for detoxifying chemicals is:

- a) kidney
- b) liver
- c) pancreas
- d) stomach

ANSWER: B -- LIVER

BIOL-93; Multiple Choice: Which of the following is NOT a nitrogenous waste compound excreted by animals?

- a) urea
- b) ammonia
- c) uric acid
- d) pyridine

ANSWER: D -- PYRIDINE

## ***Science Bowl***

## **BIOLOGY**

BIOL-93; Multiple Choice: The clavicles are the bones commonly referred to as:

- a) the shoulder blades
- b) the shin bones
- c) the collar bones
- d) none of the above

ANSWER: C -- THE COLLAR BONES

BIOL-93; Multiple Choice: Which of the following nourishes a developing seed?

- a) pollen tube
- b) nectar
- c) endosperm
- d) zygote

ANSWER: C -- ENDOSPERM

BIOL-93; Multiple Choice: Which of the following organs do the pulmonary arteries service?

- a) heart
- b) lungs
- c) lower trunk and legs.

ANSWER: B -- LUNGS

BIOL-93; Multiple Choice: White blood cells are called:

- a) lymphocytes
- b) leucocytes
- c) plasma

ANSWER: B -- LEUCOCYTES

BIOL-93; Short Answer: The small intestine is composed of three segments. Two of these segments are the jejunum and the ileum. Name the third segment.

ANSWER: DUODENUM