**Science Bowl Questions**

**Round 1**

**TOSS-UP**

1. BIOLOGY *Multiple Choice* In the process of meiosis, a cell is permanently transformed into \_\_\_\_\_\_, and cannot be divided again until fertilization.

W) Gonad

X) Diploid Germ Cell

Y) Gamete

Z) Somatic Cell

ANSWER: Y) GAMETE

**BONUS**

1. BIOLOGY *Short Answer* In 1858, which man completed the cell theory, by stating that all cells come from preexisting cells?

ANSWER: RUDOLF VIRCHOW

**TOSS-UP**

1. BIOLOGY *Short Answer* A population that is known to be “not evolving”, is in this type of equilibrium.

ANSWER: HARDY WEINBERG EQUILIBRIUM

**BONUS**

1. BIOLOGY *Short Answer* This term is known to describe random change in the frequency of alleles, caused by the random sampling of a generation's genes during reproduction.

ANSWER: GENETIC DRIFT

**TOSS-UP**

1. BIOLOGY *Multiple Choice* The process of removing an amine group from a molecule is known as:

W) Deamination

X) Staudinger Reduction

Y) Amine Alkylation

Z) Amide Reduction

ANSWER: W) DEAMINATION

**BONUS**

1. BIOLOGY *Short Answer* Give the name of the compound with a chemical formula of C6H5COH.

ANSWER: BENZALDEHYDE

**TOSS-UP**

1. BIOLOGY *Short Answer* What is the name hypothesis that states that the world and all of its biological and physical components are intertwined in a global system of homeostasis?

ANSWER: GAIA HYPOTHESIS

**BONUS**

1. BIOLOGY *Short Answer* What is the term, in contrast to apoptosis, that is a form of mass cell death, but due to extensive cellular injury?

ANSWER: NECROSIS

**TOSS-UP**

1. BIOLOGY *Multiple Choice* Glycolysis is the process by which glucose is converted into which compound?

W) ATP

X) NADH

Y) Pyruvate

Z) Glycerol

ANSWER: Y) PYRUVATE

**BONUS**

1. BIOLOGY *Short Answer* Inside the chloroplasts, the stacked structures known as grana are comprised of this membrane in which light dependent reactions take place.

ANSWER: THYLAKOID

**TOSS-UP**

1. BIOLOGY *Short Answer* When cells move towards an area of higher concentration of a specific chemical, then what type of chemotaxis is this?

ANSWER: POSITIVE

**BONUS**

1. BIOLOGY *Short Answer* What is the name given to projections from the cell membranes which help the cell move, comprised mainly of cilia and flagella?

ANSWER: UNDULIPODIUM

**TOSS-UP**

1. BIOLOGY *Short Answer* Where in the pancreas is insulin produced?

ANSWER: ISLETS OF LANGERHANS

**BONUS**

1. BIOLOGY *Short Answer* When a body is unable to produce necessary amounts of insulin, then the person is diagnosed with which type of diabetes?

ANSWER: TYPE 1

**TOSS-UP**

1. BIOLOGY *Multiple Choice* How many amino acids coded for in the standard genetic code?

W) 20

X) 21

Y) 22

Z) 23

ANSWER: W) 20

**BONUS**

1. BIOLOGY *Short Answer* What element does glutamine regularly donate to the body’s anabolic processes?

ANSWER: NITROGEN

**TOSS-UP**

1. BIOLOGY *Short Answer* What is the name given to the change in growth movement of plants due to gravity?

ANSWER: GRAVITROPISM

**BONUS**

1. BIOLOGY *Short Answer* Nyctinasty is the stimuli in plants which causes it to move in response to what?

ANSWER: DARKNESS (ACCEPT NIGHT)

**TOSS-UP**

1. BIOLOGY *Multiple Choice* Serotonin’s main purpose to the human body is to:

W) Regulate mood

X) Control muscle contraction

Y) Adjust sleeping habits

Z) Regulate intestinal movement

ANSWER: Z) REGULATE INTESTINAL MOVEMENT

**BONUS**

1. BIOLOGY *Short Answer* When used as a drug, what does norepinephrine do to a person’s blood pressure?

ANSWER: INCREASES IT

**TOSS-UP**

1. BIOLOGY *Short Answer* ALS, a form of motor neuron disease, is commonly known as this, after the famous baseball player.

ANSWER: LOU GEHRIG’S DISEASE

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the fifth cranial nerve, which is responsible for facial sensation?

ANSWER: TRIGEMINAL NERVE

**TOSS-UP**

1. BIOLOGY *Multiple Choice* What is the name of the period of time when the heart relaxes after contraction in preparation for refilling with circulating blood?

W) Atrial Diastole

X) Cardiac Diastole

Y) Ventricular Diastole

Z) Systole

ANSWER: X) CARDIAC DIASTOLE

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the technique in which a doctor mechanically widens a narrowed or obstructed blood vessel?

ANSWER: ANGIOPLASTY

**TOSS-UP**

1. BIOLOGY *Multiple Choice* In the process of translation, this genetic unit is decoded to produce a specific polypeptide, based on the genetic code specified by the unit.

W) mRNA

X) tRNA

Y) rRNA

Z) tmRNA

ANSWER: W) mRNA

**BONUS**

1. BIOLOGY *Short Answer* How many aromatic rings do the pyrimidine bases consist of?

ANSWER: 1

**TOSS-UP**

1. BIOLOGY *Multiple Choice* The main protein that makes up connective tissue is:

W) Collagen

X) Keratin

Y) Myosin

Z) Elastin

ANSWER: W) COLLAGEN

**BONUS**

1. BIOLOGY *Short Answer* Fish are good sources of this fatty acid, which are nutritionally essential to the human body.

ANSWER: OMEGA 3

**TOSS-UP**

1. BIOLOGY *Multiple Choice* What is the name of the molecule upon which an enzyme acts?

W) Substrate

X) Tetramer

Y) Inhibitor

Z) Activator

ANSWER: W) SUBSTRATE

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the enzyme complex that appears in mammalian stomachs, and is used in the coagulation of milk?

ANSWER: RENNET

**TOSS-UP**

1. BIOLOGY *Multiple Choice* The general term used to describe the number of complete sets of chromosomes in a biological cell is:

W) Monoploid Number

X) Haploid Number

Y) Ploidy

Z) Allopolyploid

ANSWER: Y) PLOIDY

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the structure formed before implantation, and is used to protect the embryoblast, and then will form the placenta?

ANSWER: BLASTOCYST

**TOSS-UP**

1. BIOLOGY *Multiple Choice* How many nitrogen atoms are found in a pyrimidine compound?

W) 4

X) 3

Y) 2

Z) 1

ANSWER: Y) 2

**BONUS**

1. BIOLOGY *Short Answer* ATP Synthase is an enzyme that can synthesize ATP from which previous nucleotide?

ANSWER: ADP

**TOSS-UP**

1. BIOLOGY *Multiple Choice* What is the name of the projection of the nerve cell that conducts electrical impulses away from the neuron’s cell body?

W) Node of Ranvier

X) Dendrite

Y) Myelin Sheath

Z) Axon

ANSWER: Z) AXON

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the membrane which covers the abdominal cavity?

ANSWER: PERITONEUM

**TOSS-UP**

1. BIOLOGY *Multiple Choice* Spiders and crabs can be listed in which Phylum?

W) Chordata

X) Arthropada

Y) Annelida

Z) Echiura

ANSWER: X) ARTHROPODA

**BONUS**

1. BIOLOGY *Short Answer* Formerly known as the kingdoms Protista, Fungi, Plantae, and Animala, the modern classification puts all of them into which one Domain?

ANSWER: EUKARYA

**TOSS-UP**

1. BIOLOGY *Multiple Choice* Cell Membranes consist primarily of which 2 biological molecules?

W) Proteins and Lipids

X) Nucleic Acids and Proteins

Y) Lipids and Carbohydrates

Z) Carbohydrates and Proteins

ANSWER: W) PROTEINS AND LIPIDS

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the process in which cells engulf molecules with their cell membranes, in order to absorb them?

ANSWER: ENDOCYTOSIS

**TOSS-UP**

1. BIOLOGY *Short Answer* What is the name of the general process of breaking down a polysaccharide into a monosaccharide?

ANSWER: CATABOLISM

**BONUS**

1. BIOLOGY *Short Answer* What is the term given to the fat subgroup of the biological molecule group of lipids?

ANSWER: TRIGLYCERIDES

**TOSS-UP**

1. BIOLOGY *Multiple Choice* What is the name of the muscle, connected to the gastrocnemius, which is one of the 2 major muscles that make up the calf?

W) Sartorius

X) Biceps Femoris

Y) Soleus

Z) Peroneus Brevis

ANSWER: SOLEUS

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the system of tubes inside the compact bone, which serves as the container for blood vessels and nerves traveling through bone?

ANSWER: HAVERSIAN CANALS

**TOSS-UP**

1. BIOLOGY *Multiple Choice* What is the name of the conjugate base of a carboxylic acid?

ANSWER: CARBOXYLATE (ACCEPT CARBOXYLATE ANION)

**BONUS**

1. BIOLOGY *Short Answer* Give the chemical formula for the smallest alkyl group.

ANSWER: CH3

**TOSS-UP**

1. BIOLOGY *Short Answer* What is the name of the process by which Prokaryotic cells divide?

ANSWER: BINARY FISSION

**BONUS**

1. BIOLOGY *Short Answer* What is the name of the region in which 2 sister chromatids first come in contact?

ANSWER: CENTROMERE

**TOSS-UP**

1. BIOLOGY *Short Answer* If an amino acid is considered a \_\_\_\_\_\_ amino acid, then it means that humans cannot synthesize it.

ANSWER: ESSENTIAL (ACCEPT INDISPENSABLE)

**BONUS**

1. BIOLOGY *Short Answer* In the process of transcription, what is the name of the enzyme that is needed for constructing RNA chains from DNA templates?

ANSWER: RNA POLYMERASE