SCIENCE BOWL ½ QUESTION SET 25/1/13  
  
1. Toss-up:  Which of the following hydrocarbons contain 4 hydrogen atoms in a single molecule?  
I. Methane  
II. Propane  
III. Cyclohexane  
IV. Ethene  
Answer - I, II  
  
Bonus: Chemistry multiple choice - What are hydrocarbons?  
W. Molecules consisting of either carbon or hydrogen bonded to another element  
X. Molecules consisting of only carbon and hydrogen  
Y. Molecules consisting of elements other than carbon and hydrogen  
Z. Molecules consisting of oxygen and nitrogen  
Answer - X. Molecules consisting of only carbon and hydrogen  
  
2. Biology multiple choice - what is the hormone that is released into the bloodstream when startled or frightened?  
W. epinephrine  
X. Progesterone  
Y. Cortisol  
Z. Oxytocin  
Answer - W. epinephrine  
  
Bonus - Biology short answer - What mechanism of cellular communication sends a short lived signal restricted to the cells in the immediate vicinity of the releasing cell?  
Answer - Paracrine signaling  
  
3. Toss-up: Biology Short answer - Which of the following are types of receptor proteins?  
I. Intracellular receptors  
II. Enzymatic receptors  
III. Cell surface receptors  
IV.  Cell-to-cell receptors  
Answer - I, II, III  
  
  
  
  
Bonus: Biology Multiple choice- What is the belief in a life force outside the jurisdiction of physical chemical laws?  
W. Cheondoism  
X. Sufism  
Y. Druidism  
Z. Vitalism  
Answer - Z. Vitalism  
  
4. Toss-up: Biology Multiple Choice - What is the approximate diameter of a ribosome?  
w. between 10-100 micrometers  
x. between 1 - 10 micrometers  
y. between 10 -100 nanometers  
z. between 1 - 10 nanometers  
Answer - y. between 10 -100 nanometers  
  
Bonus: Which chemical group consists of a nitrogen atom bonded to two hydrogen atoms and a carbon skeleton?  
Answer - Amino  
  
  
5. Toss-up: Biology - What part of a cell functions as a barrier that regulates the amounts of oxygen, nutrients, waste and such materials to pass through?  
Answer - Plasma Membrane  
  
Bonus: What is the process in which protists engulf smaller organisms or food particles?  
Answer - Phagocytosis  
  
6. Toss-up: Biology short answer -  In a plant cell, what are the channels that perforate the cell walls?  
Answer - plasmodesmata  
  
Bonus: Which phase of meiosis 1 does the breakdown of proteins, that allow homologs to separate. In this phase the homologs move toward opposite poles.  
Answer - Metaphase 1  
  
7. Toss -up: Biology Short answer - What membrane molecule is bound to a light absorbing pigment molecule?  
Answer - A opsin  
  
  
  
Bonus: What is the colorless fluid derived from interstitial fluid in the lymphatic system of vertebrates?  
Answer - Lymph  
  
8. Toss-up Math short answer - If the Sid and Saaket decide to consume 2.1 gallons of water in half a day. How many liters of water would they drink in a four week month if they continued at this pace.  
Answer - 117.6 gallons  
  
Bonus: What is 23.7 x 81.23 in proper significant figures?  
Answer - 1925.2  
  
9. Toss up: Physics short answer - A Newton is equal to which of the following?   
w)  kilogram-meter per second  
x)  meter per second squared  
y)  kilogram-meter per second squared  
z)  kilogram per meter-second  
Answer - y)  kilogram-meter per second squared  
  
Bonus: If a ball leaves its starting point, on earth, with a vertical velocity of 6 m/s, how long would it take for the ball to return to its starting point.  
Answer - 1.2 s  
  
10. Toss-up: Earth/ Space short answer - What element makes up the innermost core of a type 2 supernova just before core collapse?  
Answer - Iron  
  
Bonus: What are the two most abundant elements in a G-type star?  
Answer - Carbon and Helium  
  
11. Toss-up: General Science short answer - If it is 7:47 AM, on a Tuesday in Beijing   
China what day and time, would it be in London, England?  
Answer - Tuesday 12:47 am  
  
Bonus: What is the number of valence electrons the element Polonium has?  
Answer - 6  
  
12. Toss-up: Math short answer - In terms of 1 what is the imaginary number i to the power of 10?  
Answer: -1  
  
Bonus:What is the limit of the fraction 1/x  as x approaches infinity?  
Answer - 0