Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due in class – Tues August 28th

This homework covers Chapter 1 from your text and the ‘PDF’ of the chemistry chapter found in the ‘Homework’ folder on Canvas.

Chapter 1

Ch1.1, pg 4 is where you will find the answer to this question

All organisms share a common coding system for their genomic information. The common features of heredity imply all of the following EXCEPT that

1. all life forms on Earth share a common ancestor.
2. the study of one organism’s genes often reveals principles that apply to other organisms.
3. all organisms will have the same number of genes.
4. genes from one organism will often function in another organism.

Ch 1.1, pg 3

The Green Revolution would have seen limited success if there had been a lack of usage of which of the following?

1. Alternative energy sources
2. Fossil fuels
3. Genetic methods and principles
4. Gene sequencing
5. None of the above

Ch 1.1, pg 3

Bacteria may be used to synthesize certain drugs and food additives because

1. they are identical to human cells.
2. scientists can transform them into human cells.
3. their genetic systems are similar to humans.
4. genes added to the bacterial genome can often function normally.
5. Both c and d

Ch1.1, pg 5

Which of the following is NOT a model genetic organism?

1. Budding yeast, *Saccharomyces cerevisiae*
2. Fruit fly, *Drosophila melanogaster*
3. Human beings, *Homo sapiens*
4. Worm, *Caenorhabditis elegans*
5. Herbaceous plant, *Arabidopsis thaliana*

Ch 1.1, pg 5

Which of the following are characteristics a model genetic organism should have?

1. Has a slow generation time
2. Has easily defined characteristics
3. Has a small number of progeny
4. Requires highly technical equipment to be studied
5. Is easily studied outdoors

Ch 1.1, pg 5

Which of the following sub-disciplines of genetics focuses on how an individual organism inherits and passes on its genes to the next generation?

1. Transmission genetics
2. Molecular genetics
3. Agricultural genetics
4. Population genetics

Ch 1.1, pg 3; and Ch 1.2, pg 10

True or False Recent discoveries in genetic engineering allowed humans to genetically manipulate agriculture for the first time.

Ch 1.2, pg 8

Gregor Mendel is generally recognized as the father of genetics because he

1. generated new varieties of pea plants by random crosses of natural varieties.
2. discovered the principles of heredity by crossing different varieties of pea plants and analyzing their traits in subsequent generations.
3. discovered that inheritance of specific traits is associated with inheritance of particular chromosomes.
4. All of the above
5. Both b and c

Ch 1.2, pg 9

August Weismann cut off the tails of mice for 22 consecutive generations, yet in each generation all the descendants were born with long tails. His experiment demonstrated that:

1. acquired characteristics are not heritable.
2. sex cells carry a complete set of genetic information that is passed to offspring.
3. the mice must have produced “tail gemmules” before their tails were cut off.
4. tail length is not genetically determined.
5. Both a and b.

Ch 1.2, pg 10

True or False - The human genome was the first eukaryotic genome to be completely sequenced.

Ch 1.2, pg 8

Incorrect models of inheritance include all of the following EXCEPT

1. pangenesis.
2. preformationism.
3. blending inheritance.
4. inheritance of acquired traits.
5. Actually, all of these are incorrect.

Ch 1.2, pg 8

If blending inheritance were true, a cross between a small dog and a large dog would yield

1. 50% small dogs and 50% large dogs.
2. all small dogs.
3. all large dogs.
4. all medium-sized dogs.
5. no offspring

Ch 1 intro, pg 2

How did Hopi culture contribute to the high incidence of albinism among members of the Hopi tribe?

Describe at least one trait that appears to run in your family (appears in multiple members of the family). Do you think that this trait runs in your family because it is an inherited trait or because it is caused by environmental factors that are common to family members? How might you distinguish between these possibilities?"

**Essential Chemistry for Biology ( the PDF in your Homework folder)**

Complete the following questions as you read the chapter content—Some Basic Chemistry:

Match the following terms with their correct definitions: matter, atom, molecule, element, and compound.

a. The smallest unit of matter that retains the properties of its specific type of matter: \_\_\_\_\_\_\_\_\_\_\_

b. A substance that cannot be broken into a simpler substance: \_\_\_\_\_\_\_\_\_\_\_ c. Anything that occupies space and takes up mass: \_\_\_\_\_\_\_\_\_\_\_

d. Substances with two or more elements in a fixed ratio: \_\_\_\_\_\_\_\_\_\_\_ e. Atoms that are bonded to one another covalently: \_\_\_\_\_\_\_\_\_\_\_

Is sodium chloride (NaCl) an element? If not, explain your answer.

Complete the following questions as you read the chapter content—**Water and Life:**

Which of the following is a unique property of water?

1. Water is cohesive.
2. Ice can float.
3. The temperature of water can be regulated.
4. Water is a crucial solvent.
5. All of the above are properties of water.

* **Major Theme Connection: Read page 33 of the PDF**
* How does radiometric dating provide support for the theory of evolution by natural selection?