**Chapter 4 Quiz**

*For questions 1-7, circle the best answer. 1 mark each.*

1) Chromatin is

A. a substance that contains several molecules of DNA within each strand

B. a substance within the nucleus that contains DNA and proteins

C. a substance that unfolds before cell division

D. condensed chromosome

**BLM 2-9**

2) A gene mutation is

A. a change in the specific order of the A, G, C, and T bases that make up a particular protein

B. a change in the specific order of the sugar and phosphates that make up a particular protein

C. a substance that changes the DNA structure

D. a substance that causes genes to be copied incorrectly

3) Cystic fibrosis is

A. an example of a neutral mutation

B. an example of a positive mutation

C. an example of a negative mutation

D. the result of the substitution for the base A for the T base in only one position on the gene

4) Which one of the following statements is **NOT**true?

A. A gene stores the information to make a particular protein.

B. All the genes within the nucleus of a cell will be copied to make a protein at some time in the life cycle of a cell.

C. Different types of cells in your body contain the same genetic information.

D. Different proteins have different sequences of bases.

5) Which of the following steps for the production of a protein is **INCORRECT**?

A. The DNA message for a protein is copied into RNA.

B. The nucleus receives a chemical signal to make a specific protein.

C. The manufactured protein enters the endoplasmic reticulum.

D. DNA leaves through the nuclear pore.

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|  | 6) | Which of the following shows the correct chromosome combination for a female human?   |  |  | | --- | --- | | A. | XX plus 44 other chromosomes | | B. | XY plus 44 other chromosomes | | C. | XX plus 23 other chromosomes | | D. | XY plus 23 other chromosomes | |
|  | 7) | A mutation   |  |  | | --- | --- | | A. | is a change in the DNA that may be harmful | | B. | is a change in the DNA that may be harmless | | C. | can be caused by chemicals, radiation, or viruses | | D. | all of the above | |

8) a) Below is a DNA sequence of gene X. Rewrite the complementary DNA sequence below the original and show a substitution mutation. Underline where the substitution mutation occurred on your DNA sequence. (2 marks)

-----GATAACTGGTGTGATCG-----

b) Suppose this was a negative mutation. Use the Central Dogma to explain how this negative mutation affects protein X. Explain how the resultant protein X could affect the individual carrying this negative mutation. (5 marks)