Biology K/H Unit 5: (Protein Synthesis, Mutations & Karyotypes) TEST Review

1. What is the function of a gene?
2. What are the similarities between DNA and RNA?
3. What are the differences between DNA and RNA?
4. What is the role of RNA in protein synthesis? (mRNA, tRNA, rRNA)
5. What are the building blocks (monomers) of proteins? Nucleic acids?
6. What is DNA Replication?
7. Describe the steps of transcription.
8. Describe the steps of translation.
9. What is the importance of ribosomes?
10. What is an amino acid? What is a codon?
11. What is an anticodon?
12. List the steps (in order) that lead to the expression of a trait (How are genes expressed?)
13. If you have 5 amino acids, how many codons were needed?
14. If you have 15 nitrogen bases, how many codons do you have?
15. Why are there more codons (64) than amino acids (20)?
16. How many chromosomes are in a normal karyotype?
17. What is an Intron? What is an Exon?
18. What is a mutation?
19. What is a point mutation? List and describe the different types.
20. What is a chromosomal mutation? List and describe the different types.
21. What is Trisomy? Monosomy?
22. What type of cell, somatic or gametes, passes on mutations to their offspring?
23. Who will be affected by a liver cancer cell mutation? (Individual OR the offspring)?
24. What is a mutagen? List the different types of mutagens.
25. A strand of DNA with the sequence CCC GGA ATC undergoes a mutation in which the first G is changed to an A. The new strand reads: CCC AGA ATC. How will this affect the protein that is formed?

26. Use the DNA sequence below to answer the questions that follow.

        AATCCGATTAAA

   a. What are the mRNA codons that complement this strand?
     _____
   b. What are the tRNA anticodons that complement the codons above?
     _____
   c. What is the maximum number of amino acids this DNA strand can code for? _____
   d. What is the amino acid sequence? _____
   e. When compared to the DNA strand above, what type of mutation would the following DNA strand be AAATCCGATTAAA? _____.
   f. What is the new mRNA strand? _____
   g. What is the new amino acid sequence? _____
   h. How many amino acids changed as a result of the mutation? _____

27. The figure below represents a _____? Based on this figure you could determine the sex of the human to be _____?

Human male G-bands