Chapter 13 Prep Test

Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. RNA differs from DNA in that RNA
a. is single-stranded.
b. contains a different sugar molecule.
c. contains the nitrogen base uracil.
d. All of the above

____ 2. Which of the following is *not* found in DNA?
a. adenine
b. cytosine
c. uracil
d. None of the above

____ 3. RNA is chemically similar to DNA except that the base thymine is replaced by a structurally similar base called
a. uracil.
b. alanine.
c. cytosine.
d. codon.

____ 4. The function of rRNA is to
a. synthesize DNA.
b. synthesize mRNA.
c. form ribosomes.
d. transfer amino acids to ribosomes.

____ 5. During transcription,
a. proteins are synthesized.
b. DNA is replicated.
c. RNA is produced.
d. translation occurs.

____ 6. During transcription, the genetic information for making a protein is "rewritten" as a molecule of
a. messenger RNA.
b. ribosomal RNA.
c. transfer RNA.
d. translation RNA.

____ 7. Each set of three nucleotides in mRNA that specifies a particular amino acid is called a(n)

a. mutagen.
b. codon.
c. anticodon.
d. exon.

Use the diagram below of a strand of an mRNA and the genetic code shown there to answer the following questions:

mRNA: CUCAAGUGCUUC

Genetic Code:

	U	C	A	G	
U	Phe	Ser	Tyr	Cys	**U**
	Phe	Ser	Tyr	Cys	**C**
	Leu	Ser	stop	stop	**A**
	Leu	Ser	stop	Trp	**G**
C	Leu	Pro	His	Arg	**U**
	Leu	Pro	His	Arg	**C**
	Leu	Pro	Gln	Arg	**A**
	Leu	Pro	Gln	Arg	**G**
A	Ile	Thr	Asn	Ser	**U**
	Ile	Thr	Asn	Ser	**C**
	Ile	Thr	Lys	Arg	**A**
	Met	Thr	Lys	Arg	**G**
G	Val	Ala	Asp	Gly	**U**
	Val	Ala	Asp	Gly	**C**
	Val	Ala	Glu	Gly	**A**
	Val	Ala	Glu	Gly	**G**

____ 8. Refer to the illustration above. What is the portion of the protein molecule coded for by the piece of mRNA shown in the diagram?

a. Ser—Tyr—Arg—Gly
b. Val—Asp—Pro—His
c. Leu—Lys—Cys—Phe
d. Pro—Glu—Leu—Val

____ 9. Refer to the illustration above. The anticodons for the codons in the mRNA in the diagram are

a. GAG—UUC—ACG—AAG.
b. GAG—TTC—ACG—AAG.
c. CUC—GAA—CGU—CUU.
d. CUU—CGU—GAA—CUC.

____10. Which of the following would represent the strand of DNA from which the mRNA strand in the diagram was made?

a. CUCAAGUGCUUC
b. GAGUUCACGAAG
c. GAGTTCACGAAG
d. AGACCTGTAGGA

mRNA codons	**amino acid**
UAU, UAC	tyrosine
CCU, CCC, CCA, CCG	proline
GAU, GAC	aspartic acid
AUU, AUC, AUA	isoleucine
UGU, UGC	cysteine

____11. Suppose that you are given a protein containing the following sequence of amino acids: tyrosine, proline, aspartic acid, isoleucine, and cysteine. Use the portion of the genetic code given above to determine which of the possible answers contains a DNA sequence that codes for this amino acid sequence.

a. AUGGGUCUAUAUACG
b. ATGGGTCTATATACG
c. GCAAACTCGCGCGTA
d. ATAGGGCTTTAAACA

____12. Each of the following is a type of RNA *except*

a. carrier RNA.
b. messenger RNA.
c. ribosomal RNA.
d. transfer RNA.

____13. At the very beginning of translation, the first tRNA molecule

a. binds to the ribosome's A site.
b. attaches directly to the DNA codon.
c. connects an amino acid to its anticodon.
d. attaches to the P site of the ribosome.

____14. A ribosome has
a. one binding site for DNA.
b. three binding sites used during translation.
c. four binding sites for tRNA.
d. no binding sites since the proteins must detach.

____15. Transfer RNA
a. carries an amino acid to its correct codon.
b. synthesizes amino acids as they are needed.
c. produces codons to match the correct anticodons.
d. converts DNA into mRNA.

____16. In order for protein synthesis to occur, mRNA must migrate to the
a. ribosomes.
b. *lac* operon.
c. RNA polymerase.
d. heterochromatin.

____17. mRNA : nucleus::
a. nucleus : protein
b. protein : cytoplasm
c. nucleus : ribosomes
d. protein : nucleus

____18. codon : mRNA::
a. P site : RNA molecules
b. ribosome : DNA molecules
c. DNA : protein
d. anticodon : tRNA

____19. In bacteria, a group of genes that code for functionally related enzymes, their promoter site, and the operator that controls them all function together as a(n)
a. exon.
b. intron.
c. operon.
d. ribosome.

____20. The presence of a repressor molecule prevents the action of what enzyme?
a. DNA polymerase
b. lactase
c. RNA polymerase
d. permease

____21. The portions of DNA molecules that actually code for the production of proteins are called
a. mutons.
b. exons.
c. introns.
d. exposons.

____22. The non-coding portions of DNA that are separated from the portions of DNA actually used during transcription are called
a. mutons.
b. exons.
c. introns.
d. exposons.

True (a) or False(b)

____23. When mRNA leaves the nucleus and enters the cytoplasm, it has a complete set of both introns and exons.

____24. Introns are the portions of a gene that actually get translated into protein.

____25. A point mutation is the failure of a chromosome pair to separate during mitosis.