Biology EOC Review 8
From DNA to Proteins

Multiple Choice
Write the letter that best answers the question or completes the statement.

1. All of the following are true about the structure of DNA except
   A. short strands of DNA are contained in chromosomes inside the nucleus of a cell.
   B. Every DNA nucleotide contains a sugar, a phosphate group, and a nitrogen base.
   C. DNA consists of two strands of nucleotides joined by hydrogen bonds.
   D. the long strands of nucleotides are twisted into a double helix.

2. A nucleotide consists of
   F. a sugar, a protein, and a adenine.
   G. a sugar, an amino acid, and starch.
   H. a sugar, a phosphate group, and a nitrogen base
   J. a starch, a phosphate group, and a nitrogen base.

3. The part of the molecule for which deoxyribonucleic acid is named is the
   A. phosphate group.
   C. nitrogen base.
   B. sugar.
   D. bonds.

4. The amount of guanine in an organism always equals the amount of
   F. protein.
   H. adenine.
   G. thymine.
   J. cytosine.

5. Watson and Crick built models that demonstrated that
   A. DNA and RNA have the same structure.
   B. DNA is made of two strands that twist into a double helix.
   C. guanine forms hydrogen bonds with adenine.
   D. thymine forms bonds with cytosine.

6. During DNA replication, a complementary strand of DNA is made for each original DNA strand. Thus, if a portion of the original strand is CCTAGCTAC, then the new strand will be
   F. TTGCATGCT
   H. CCTAGCTAC
   G. AAGTATCGT
   J. GGATCGATG

7. The attachment of nucleotides to form a complementary strand of DNA
   A. is accomplished by DNA polymerase.
   B. is accomplished only in the presence of tRNA.
   C. prevents separation of complementary strands of RNA.
   D. is the responsibility of the complementary DNA mutagen.

8. The enzymes responsible for adding nucleotides to the exposed DNA template bases are
   F. replicases.
   H. helicases.
   G. DNA polymerases.
   J. None of the above.

9. RNA differs from DNA in that RNA
   A. is single-stranded.
   C. contains the nitrogen base uracil.
   B. contains a different sugar molecule.
   D. All of the above.

10. All of the following are found in DNA except
   F. adenine.
   H. thymine.
   G. uracil.
   J. guanine.

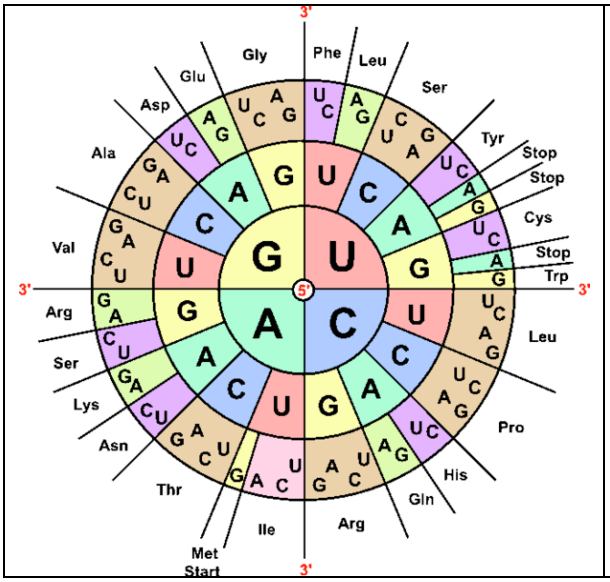
11. In RNA molecules, adenine is complementary to
   A. cytosinme.
   C. thymine.
   B. guanine.
   D. uracil.

12. The function or rRNA is to
F. synthesize DNA.
G. synthesize mRNA.
H. form ribosomes.
J. transfer amino acids to ribosomes.

13. 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.

14. Transcription proceeds when RNA polymerase
F. attaches to a ribosome.
G. binds to a strand of DNA.
H. binds to a strand of RNA.
J. attaches to a promoter molecule.

15. Each nucleotide triplet in mRNA that specifies a particular amino acid is called a(n)
A. mutagen.
B. codon.
C. anitcodon.
D. exon.



Second letter

First letter	U	C	A	G	Third letter
U	UUU Phe, UUC Phe	UCU Ser, UCC Ser, UCA Ser, UCG Ser	UAU Tyr, UAC Tyr	UGU Cys, UGC Cys	U
	UUA Leu, UUG Leu		UAA Stop, UAG Stop	UGA Stop, UGG Trp	C, A, G
C	CUU Leu, CUC Leu, CUA Leu, CUG Leu	CCU Pro, CCC Pro, CCA Pro, CCG Pro	CAU His, CAC His, CAA Gln, CAG Gln	CGU Arg, CGC Arg, CGA Arg, CGG Arg	U, C, A, G
A	AUU Ile, AUC Ile, AUA Ile	ACU Thr, ACC Thr, ACA Thr, ACG Thr	AAU Asn, AAC Asn, AAA Lys, AAG Lys	AGU Ser, AGC Ser, AGA Arg, AGG Arg	U, C, A, G
	AUG Met				
G	GUU Val, GUC Val, GUA Val, GUG Val	GCU Ala, GCC Ala, GCA Ala, GCG Ala	GAU Asp, GAC Asp, GAA Glu, GAG Glu	GGU Gly, GGC Gly, GGA Gly, GGG Gly	U, C, A, G

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

mRNA: CUCAAGUGCUUC

16. Refer to the illustration above. What is the portion of the protein molecule coded for by the piece of mRNA shown in the diagram?
F. Ser-Tyr-Arg-Gly
G. Val-Asp-Pro-His
H. Leu-Lys-Cys-Phe
J. Pro-Glu-Leu-Val

17. 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

18. Which of the following would represent the strand of DNA from which the mRNA strand in the diagram was made?
F. CUCAAGUGCUUC
G. GAGUUCACGAAG
H. GAGTTCACGAAG
J. AGACCTGTAGGA