Name _____ Class_____Date_____

Assessment

Chapter Test

DNA, RNA, and Proteins

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

_____ 1. What did Griffith observe in his transformation experiments?
a. Disease-causing bacteria changed into harmless bacteria.
b. Harmless bacteria changed into disease-causing bacteria.
c. S bacteria changed into R bacteria.
d. S bacteria changed into harmless bacteria.

_____ 2. In 1944, Avery conducted a series of experiments that showed that the material responsible for transformation is
a. mRNA.
b. DNA.
c. protein.
d. bacteriophage.

_____ 3. The work of Chargaff, Wilkins, and Franklin formed the basis for
a. Watson and Crick's DNA model.
b. Hershey and Chase's work on bacteriophages.
c. Avery's work on transformation.
d. Griffith's discovery of transformation.

_____ 4. At the end of the replication process, each of the two new DNA molecules is composed of which of the following?
a. two new DNA strands
b. one new and one original DNA strand
c. one new and one mutated DNA strand
d. two original DNA strands

_____ 5. RNA differs from DNA in that RNA
a. is single-stranded.
b. contains a different sugar.
c. contains uracil.
d. All of the above

_____ 6. The enzyme that adds and links complementary RNA nucleotides during transcription is called
a. RNA polymerase.
b. DNA polymerase.
c. helicase.
d. protein.

In the space provided, write the letter of the description that best matches the term or phrase.

_____ 7. transcription

_____ 8. translation

_____ 9. nucleotide

_____ 10. deoxyribose

_____ 11. adenine

_____ 12. anticodon

_____ 13. cytosine

_____ 14. codon

_____ 15. purines

_____ 16. pyrimidines

_____ 17. helicases

_____ 18. DNA polymerases

_____ 19. replication forks

_____ 20. RNA polymerase

a. three-nucleotide sequence in tRNA

b. enzyme that builds an mRNA from DNA

c. three-nucleotide sequence in mRNA

d. enzymes that open up the double helix by breaking the hydrogen bonds that link complementary bases

e. transferring genetic information from a gene to mRNA

f. a nitrogenous base that forms hydrogen bonds with guanine

g. a nitrogenous base that forms hydrogen bonds with thymine

h. enzymes that have a proofreading role in DNA replication

i. A and G; Each has a double ring of carbon and nitrogen atoms per base.

j. portions of DNA where the double helix separates during DNA replication

k. a five-carbon sugar

l. consists of a phosphate group, a sugar molecule, and a nitrogenous base

m. putting together the amino acids that make up a protein

n. T and C; Each has a single ring of carbon and nitrogen atoms per base.

Name _____ Class_____Date_____

Questions 21–23 refer to the mRNA sequence CUC–AAG–UGC–UUC and the table below, which lists mRNA codons.

Codons in mRNA

First base	Second base U	Second base C	Second base A	Second base G	Third base
U	UUU, UUC: Phenylalanine UUA, UUG: Leucine	UCU, UCC, UCA, UCG: Serine	UAU, UAC: Tyrosine UAA, UAG: Stop	UGU, UGC: Cysteine UGA: Stop UGG: Tryptophan	U C A G
C	CUU, CUC, CUA, CUG: Leucine	CCU, CCC, CCA, CCG: Proline	CAU, CAC: Histidine CAA, CAG: Glutamine	CGU, CGC, CGA, CGG: Arginine	U C A G
A	AUU, AUC, AUA: Isoleucine AUG: Start	ACU, ACC, ACA, ACG: Threonine	AAU, AAC: Asparagine AAA, AAG: Lysine	AGU, AGC: Serine AGA, AGG: Arginine	U C A G
G	GUU, GUC, GUA, GUG: Valine	GCU, GCC, GCA, GCG: Alanine	GAU, GAC: Aspartic acid GAA, GAG: Glutamic acid	GGU, GGC, GGA, GGG: Glycine	U C A G

_____ 21. Which of the following would represent the sequence of DNA from which the mRNA sequence was made?
a. CUC–AAG–UGC–UUC
b. GAG–UUC–ACG–AAG
c. GAG–TTC–ACG–AAG
d. AGA–CCT–GTA–GGA

_____ 22. The anticodons for the codons in the mRNA sequence above are
a. GAG–UUC–ACG–AAG.
b. GAG–TTC–ACG–AAG.
c. CUC–GAA–CGU–CUU.
d. CUU–CGU–GAA–CUC.

_____ 23. Which of the following represents the portion of the protein molecule coded for by the mRNA sequence above?
a. serine–tyrosine–arginine–glycine
b. valine–aspartic acid–proline–histidine
c. leucine–lysine–cysteine–phenylalanine
d. glutamic acid–phenylalanine–threonine–lysine