

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) What was a surprising feature about the deadly nature of the 2009 H1N1 influenza virus? 1) _____
A) H1N1 affected pigs. B) H1N1 affected birds.
C) H1N1 affected healthy young people. D) H1N1 affected the elderly.
- 2) DNA and RNA are polymers composed of _____ monomers. 2) _____
A) carbohydrate B) fatty acid C) amino acid D) nucleotide
- 3) The backbone of DNA consists of _____. 3) _____
A) a repeating sugar-phosphate-sugar-phosphate pattern
B) nitrogenous bases
C) paired nucleotides
D) a repeating sugar-nucleotide-sugar-nucleotide pattern
- 4) RNA contains the nitrogenous base _____ instead of _____, which is found only in DNA. 4) _____
A) uracil... thymine B) thymine... uracil
C) a deoxyribose sugar... a ribose sugar D) uracil... guanine
- 5) If adenine makes up 20% of the bases in a DNA double helix, what percent of the bases is guanine? 5) _____
A) 30% B) 20% C) 40% D) 60%
- 6) In a DNA double helix, adenine pairs with _____ and guanine pairs with _____. 6) _____
A) uracil... cytosine B) guanine... adenine
C) cytosine... thymine D) thymine... cytosine
- 7) If one strand of a DNA double helix has the sequence GTCCAT, what is the sequence of the other strand? 7) _____
A) CAGGUA B) TGAACG C) CAGGTA D) ACTTGC
- 8) Evidence for the spiral nature of DNA came from _____. 8) _____
A) base rule studies B) X-ray crystallography studies
C) studies of disease-causing bacteria D) bacteriophage studies
- 9) What type of chemical bond joins the bases of complementary DNA strands? 9) _____
A) hydrophilic B) ionic C) hydrogen D) covalent
- 10) After replication, _____. 10) _____
A) one new DNA double helix consists of two old strands and the other new DNA double helix consists of two new strands
B) each new DNA double helix consists of two new strands
C) each new DNA double helix consists of two old strands
D) each new DNA double helix consists of one old strand and one new strand

- 11) What name is given to the collection of traits exhibited by an organism? 11) _____
A) genome B) phenotype C) genetic code D) genotype
- 12) How many amino acids are common to all living systems? 12) _____
A) 10 B) 30 C) 20 D) 100
- 13) How many nucleotides make up a codon? 13) _____
A) four B) two C) five D) three
- 14) The shared genetic code of all life on Earth is evidence that _____. 14) _____
A) bacterial cells arose earlier than eukaryotic cells
B) DNA replication is error-free
C) the genetic code arose relatively late in the history of life on Earth
D) all life shares a common ancestry
- 15) Transcription is the _____. 15) _____
A) manufacture of two new DNA double helices that are identical to an old DNA double helix
B) manufacture of a protein based on information carried by RNA
C) modification of a strand of RNA prior to the manufacture of a protein
D) manufacture of a strand of RNA complementary to a strand of DNA
- 16) If a strand of DNA has the sequence AAGCTC, transcription will result in a(n) _____. 16) _____
A) single RNA strand with the sequence UUCGAG
B) single RNA strand with the sequence TTCGAG
C) DNA double helix with the sequence AAGCTC for one strand and TTCGAG for the complementary strand
D) RNA double helix with the sequence UUCGAG for one strand and AAGCUC for the complimentary strand
- 17) Which of the following enzymes is responsible for RNA synthesis? 17) _____
A) DNA polymerase B) ribosome
C) RNA polymerase D) reverse transcriptase
- 18) The region of DNA where RNA synthesis begins is the _____. 18) _____
A) terminator B) start codon C) stop codon D) promoter
- 19) The absence of a terminator in transcription will result in _____. 19) _____
A) the production of a shorter RNA molecule
B) the creation of a virus
C) the production of a longer RNA molecule
D) a strand of mRNA that lacks its cap and tail
- 20) What protects mRNA from attack by cellular enzymes? 20) _____
A) RNA splicing
B) the lack of RNA-digesting enzymes in the cytoplasm
C) the removal of exons
D) a cap and tail

- 21) The expressed (coding) regions of eukaryotic genes are called _____. 21) _____
A) introns B) caps C) exons D) promoters
- 22) Translation converts the information stored in _____ to _____. 22) _____
A) RNA... DNA B) DNA... a polypeptide
C) DNA... RNA D) RNA... a polypeptide
- 23) The RNA that is translated into a polypeptide is _____ RNA. 23) _____
A) viral B) messenger C) ribosomal D) transfer
- 24) The DNA codon AGT codes for an amino acid carried by a tRNA with the anticodon _____. 24) _____
A) TCA B) AGU C) TCU D) AGT
- 25) Where is translation accomplished? 25) _____
A) smooth endoplasmic reticulum B) nucleoli
C) ribosomes D) lysosomes
- 26) Peptide bonds form between _____. 26) _____
A) amino acids
B) an mRNA transcript and the small ribosomal subunit
C) an mRNA codon and a tRNA anticodon
D) a tRNA and the amino acid it is carrying
- 27) What is the smallest number of nucleotides that must be added or subtracted to change the triplet grouping of the genetic message? 27) _____
A) one B) two C) three D) four
- 28) What is the ultimate source of all diversity? 28) _____
A) sexual recombination B) mutation
C) meiosis D) natural selection