

Unit 2 Review: DNA, Protein Synthesis & Enzymes

1.	One of the functions of DNA is to A. secrete vacuoles. B. make copies of itself. C. join amino acids to each other. D. carry genetic information out of the nucleus.
2.	Two sugars found in nucleic acids are A. sucrose and ribose. B. glucose and fructose. C. deoxyribose and ribose. D. deoxyribose and glucose.
3.	The number of adenine bases in a DNA molecule equals the number of thymine bases because A. DNA contains equal numbers of all four bases. B. thymine always follows adenine on each DNA strand. C. DNA is made of alternating adenine and thymine bases. D. adenine on one strand bonds to thymine on the other strand.
4.	Which of the following would not occur during complementary base pairing? A. A-T B. U-G C. C-G D. A-U
5.	Which of the following describes a DNA molecule? A. Double helix of glucose sugars and phosphates. B. Ladder-like structure composed of fats and sugars. C. Double chain of nucleotides joined by hydrogen bonds. D. A chain of alternating phosphates and nitrogenous bases.
6.	Which of the following is an example of complementary base pairing? A. Thymine – uracil. B. Guanine – adenine. C. Adenine – thymine. D. Cytosine – thymine.
7.	Which of the following is the correct matching of base pairs in DNA? A. Adenine–Guanine and Thymine–Uracil. B. Guanine–Cytosine and Adenine–Uracil. C. Adenine–Thymine and Guanine–Cytosine. D. Guanine–Thymine and Adenine–Cytosine.
8.	DNA replication involves the breaking of bonds between A. bases. B. sugars and bases. C. phosphates and bases. D. sugars and phosphates.
9.	Which of the following statements best describes DNA replication ? A. tRNA, by complementary base pairing with mRNA, produces proteins. B. RNA nucleotides, by complementary base pairing with DNA, produce DNA. C. DNA nucleotides, by complementary base pairing with DNA, produce DNA. D. RNA nucleotides, by complementary base pairing with DNA, produce tRNA.
10.	The base found in RNA nucleotides but not in DNA nucleotides is A. uracil (U). B. adenine (A). C. guanine (G). D. cytosine (C).
11.	The product of transcription is A. DNA. B. protein. C. mRNA. D. a ribosome.
12.	A section of DNA has the following sequence of nitrogenous bases: CGATTACAG Which of the following sequences would be produced as a result of transcription? A. CGTUUTCTG B. GCTAATGTC C. CGAUUACAG D. GCUAAUGUC
13.	mRNA is produced in the process called A. respiration. B. translation. C. replication. D. transcription.
14.	A function of transfer RNA (tRNA) is to A. stay in the nucleus and be copied by DNA. B. carry amino acids to the growing polypeptide chain. C. copy DNA and carry the information to the ribosome. D. read the codons and provide the site for protein synthesis.
15.	Which of the following best describes the function of mRNA? A. It stays in the nucleus and is copied by DNA. B. It carries amino acids to the growing polypeptide chain. C. It makes up the ribosomes and provides the site for protein synthesis. D. It is transcribed from the DNA and carries the information to the ribosome.
16.	The molecule that is responsible for carrying amino acids to ribosomes is A. DNA. B. tRNA. C. rRNA. D. mRNA.
17.	A polypeptide found in the cytoplasm of a cell contains 12 amino acids. How many nucleotides would be required in the mRNA for this polypeptide to be translated? A. 4 B. 12 C. 24 D. 36
18.	If the nucleotide sequence of an anticodon was AUC, then the DNA triplet would be A. ATC. B. TAG. C. AUC. D. UAG.
19.	If the code for an amino acid is AGC on the DNA molecule, the anticodon on the tRNA would be A. AGC B. TGC C. UCG D. UGC

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20.	During protein synthesis, peptide bonds are formed at the A. nucleus. B. nucleolus. C. lysosomes. D. ribosomes.
21.	Determine the sequence of amino acids produced by this DNA sequence: GGAGTTTTC A. Proline, Valine, Lysine. B. Glycine, Valine, Leucine. C. Proline, Glutamine, Lysine. D. Glycine, Glutamic acid, Leucine.
22.	Use the following information to answer the question: 1. Uracil bonds with adenine. 2. Complementary bonding between codon and anticodon. 3. DNA unzips. 4. mRNA joins with ribosome. The correct order of the above during protein synthesis is A. 1, 2, 4, 3 B. 1, 3, 2, 4 C. 3, 1, 4, 2 D. 3, 2, 1, 4
23.	The tRNA anticodon for the DNA sequence AGT would be A. UCA. B. AGU. C. TCA. D. AGT.
24.	A change in the sequence of bases in a strand of DNA that occurs as a result of exposure to X-rays is an example of A. mutation. B. denaturation. C. transcription. D. protein synthesis.
25.	For a substance to be classified as a mutagen, it must cause A. a change in DNA. B. enzymes to denature. C. hydrolysis of proteins. D. mRNA to be produced.
26.	Which of the following would be a result of the substitution of one base pair in DNA by a different base pair during replication? A. A mutation would occur. B. tRNA would bond to DNA. C. Phosphate would join with adenine. D. Uracil would appear in the DNA strand.
27.	Recombinant DNA is defined as DNA produced from A. RNA and a protein. B. DNA and hemoglobin. C. viral DNA and glucose. D. DNA of two different organisms.
28.	When a foreign gene is incorporated into an organism's nucleic acid, the resulting molecule is called A. ATP. B. recombinant DNA. C. transfer RNA (tRNA). D. messenger RNA (mRNA).
29.	If the triplet code on a DNA molecule changes from ACT to AGC, the result is called A. mutation. B. metastasis. C. translation. D. transcription.
30.	Use the following events to answer the question. 1. mRNA is formed. 2. DNA segment opens (unzips). 3. mRNA attaches to ribosomes. 4. amino acids form peptide bonds. 5. tRNA carries amino acids to mRNA. 6. The correct order of events required for protein synthesis is A. 1, 2, 3, 4, 5. B. 2, 1, 3, 4, 5. C. 2, 1, 3, 5, 4. D. 2, 1, 4, 5, 3.
31.	Which of the following terms describes the process shown below? DNA → mRNA A. Unzipping. B. Translation. C. Replication. D. Transcription.
32.	One of the functions of DNA is to A. secrete vacuoles. B. make copies of itself. C. join amino acids to each other. D. carry genetic information out of the nucleus.
33.	A role of mRNA in protein synthesis is to A. form ribosomes. B. form the protein's tertiary structure. C. carry appropriate amino acids into place. D. carry genetic information out of the nucleus.

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DNA & PROTEIN SYNTHESIS

1. B
2. C
3. D
4. B
5. C
6. C
7. C
8. A
9. C
10. A
11. C
12. D
13. D
14. B
15. D
16. B
17. D
18. A
19. A
20. D
21. C
22. C
23. B
24. A
25. A
26. A
27. D
28. B
29. A
30. C
31. D
32. B
33. D

Module 2 Review

ENZYMES REVIEW

1.	Enzymes function to increase the rate of a metabolic reaction by A. denaturing the substrate. B. adding energy to the reaction. C. decreasing the energy of activation. D. increasing the concentration of the reactants.
2.	An enzyme speeds up a chemical reaction by A. regulating pH. B. acting as a buffer. C. preventing denaturation. D. lowering the energy of activation.
3.	The role of an enzyme in a chemical reaction is to A. emulsify fats. B. prevent denaturation. C. speed up the reaction. D. buffer any acids or bases.
4.	Enzymes often A. absorb fatty acids. B. help in hydrolysis reactions. C. serve as a long term source of energy. D. serve as the structural framework of cell walls.
5.	In the cell, enzymes act as A. buffers. B. catalysts. C. neurotransmitters. D. emulsifying agents.
6.	Enzymes consist of chains of A. fatty acids. B. nucleotides. C. amino acids. D. carbohydrates.
7.	Compounds that are needed for enzymes to function properly are A. buffers. B. steroids. C. vitamins. D. heavy metals.
8.	A non-protein molecule that aids the action of an enzyme to which it is loosely bound is called a(n) A. initiator. B. coenzyme. C. competitive inhibitor. D. enzyme-substrate complex.
9.	The area of an enzyme into which a substrate fits is called the A. catalyst. B. product. C. active site. D. activated complex.
10.	The molecule that fits into the enzyme's active site is the A. codon. B. vitamin. C. substrate. D. coenzyme.
11.	The active site of an enzyme is A. formed by the substrate. B. altered by heavy metals. C. altered by the substrate concentration. D. destroyed during its reaction with a substrate.
12.	High concentrations of thyroxin in the blood will cause metabolic reactions in a cell to A. speed up. B. slow down. C. stop occurring. D. remain unchanged.
13.	Why would drugs like penicillin destroy bacteria but have no effect on human cells? A. Human enzymes would be denatured by penicillin. B. Bacterial cells would use penicillin as a coenzyme. C. Penicillin would fit the active site of bacterial enzymes. D. Enzymes in human cells would use penicillin to produce excess energy.

Module 2 Review

14.	Thyroxin treatment can be used to stimulate weight loss in some people with an endocrine deficiency. This treatment will A. cause a loss of appetite. B. increase the metabolic rate. C. prevent the conversion of fatty acids to fat. D. accelerate the conversion of glucose to glycogen.
15.	The pituitary gland secretes a hormone into the bloodstream which stimulates the production of thyroxin. In turn, production of thyroxin is inhibited by A. the effect of thyroxin on the adrenal gland. B. the effect of thyroxin on the pituitary gland. C. decreasing the amount of calcium in the diet. D. increasing the amount of iodine in the blood.
16.	The tertiary structure of an enzyme is A. its helical orientation in space. B. its three-dimensional, globular shape. C. the particular sequence of amino acids. D. the arrangement of several proteins to create a functional unit.
17.	A reaction catalyzed by a human enzyme was carried out at 20°C. If there is an excess of substrate, which of the following would cause the greatest increase in the rate of the reaction? A. Lowering the temperature to 10°C. B. Adding more enzyme and raising the temperature to 30°C. C. Adding more substrate and raising the temperature to 30°C. D. Adding more enzyme and lowering the temperature to 10°C.

ENZYMES ANSWERS

1. C
2. D
3. C
4. B
5. B
6. C
7. C
8. B
9. C
10. C
11. B
12. A
13. C
14. B
15. B
16. B
17. B