



8- A nucleotide consists of:

- a. a phosphate and a base
- b. a phosphate, and a sugar
- c. a base and an amino acid
- d. a phosphate, a sugar, and a base

9- The three nucleotides found in DNA will code for a single _____.

- a. protein
- b. messenger RNA
- c. amino acid
- d. sugar

10- The enzyme _____ unzips and unwinds the DNA molecule.

- a. DNA polymerase
- b. helicase
- c. primase
- d. DNA ligase

11- During replication, what enzyme adds complimentary bases?

- a. helicase
- b. synthesase
- c. replicase
- d. polymerase

12- Synthesis of mRNA is

- a. in the 5' to 3' direction with new nucleotides being added to the 5' end of the mRNA molecule.
- b. in the 3' to 5' direction with new nucleotides being added to the 5' end of the mRNA molecule.
- c. in the 5' to 3' direction with new nucleotides being added to the 3' end of the mRNA molecule.
- d. in the 3' to 5' direction with new nucleotides being added to the 3' end of the mRNA molecule.

13- Which of the following occurs as the ribosome shifts down the mRNA by a distance of three nucleotides?

- a. the tRNA that was in the A site moves into the E site
- b. the tRNA that was in the P site moves into the A site
- c. the tRNA that was in the E site moves into the P site
- d. the tRNA that was in the P site moves into the E site

14- What is mRNA?

- a. Messenger RNA that is used as instructions to make protein.
- b. Modified RNA, which is used to build ribosomes.
- c. Master RNA, which is used as the ultimate blueprints of the cell.
- d. Modulated RNA, which was altered by splicing patterns in the cell.

15- Gene expression refers to _____

- a. the molecular structure of DNA.
- b. the process by which protein manufactures DNA.
- c. the process by which a gene gets turned on in a cell to make RNA and proteins.
- d. the fact that biological processes rely on chemical reactions.

16- A DNA strand has the following bases: A A G C C A. What are the bases on its complimentary strand?

- a. T T C G G T
- b. A A G C C A
- c. A C C G A A
- d. C C A T T C

17- Transcription results in:

- a. complementary DNA
- b. an amino acid chain
- c. messenger RNA
- d. all of the above

18- The changes result from environmental effects of genes such

- a. segregation and recombination.
- b. duplication mutation.
- c. deletion mutation.
- d. insertion mutation.



19- The best term to describe the incorporation of a random mistake into the DNA sequence at a specific point is _____.

- a. A chromosomal mutation
- b. A point mutation
- c. A base insertion
- d. A base deletion

20- Transition mutation occurs when the base of one chemical is replaced by the other base of the same chemical purine molecule. An example of a transition mutation is _____.

- a. An adenine substituted for a guanine.
- b. A cytosine substituted for a thymine.
- c. A guanine substituted for a thymine.
- d. A thymine substituted a cytosine.

21- Which of the following concerning Numerical chromosomal mutation is not correct?

- a. Decrease chromosomes number.
- b. Increase chromosomes number.
- c. Duplication of chromosomes number.
- d. Frameshift mutation

22- A genetic change that involves duplication of chromosomes number leads to _____.

- a. Inversion
- b. Deletion
- c. Polyploidy
- d. Recombination

23- An Example of increase chromosomes number is _____.

- a. Turner syndrome
- b. Klinefelter syndrome
- c. Down syndrome
- d. all of the above

24- Spontaneous Mutation Occurs due to _____.

- a. Cosmic rays
- b. Chemical compounds
- c. Ultraviolet rays
- d. all of the above

25- Mutagens, such as _____.

- a. Ultraviolet light ray
- b. Ionizing radiation
- c. Chemical compounds
- d. all of the above

26- The study of stable phenotypic changes (known as *marks*) that do not involve alterations in the DNA sequence.

- a. Codon
- b. Epigenetics
- c. Carcinogens
- d. Mutagens

27- What are proteins around which DNA can wind for compaction and gene regulation.

- a. Thymines
- b. Histones
- c. DNA methylation
- d. DNA demethylation

28- Vitamin B12 is vital in DNA metabolism because it determines the availability of folate for nucleotide and methionine synthesis.

- a. True
- b. False

29- Vitamin C Prevention of DNA and lipid oxidation.

- a. True
- b. False

30- Zinc deficiency leading to increased DNA oxidation, DNA breaks and elevated chromosome damage rate

- a. True
- b. False



Q 2. Short Essay (10 points):

2. a- List three examples of Reasons for Genetic Testing. (2.5 points)

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2. b- List three examples of Advantages of Nutrigenomics. (2.5 points)

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2. c- List three examples of Mutations in chromosomal structure (2.5 points)

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2. d- List three examples of Types and function of RNA. (2.5 points)

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