

Chapter – 5 | Molecular Basis of Inheritance**QUIZ
PART-03**

1. In prokaryotic cells, DNA is located in a region called:
- A. Nucleus B. Nucleoid
C. Nucleosome D. Chromosome (B)

Explanation : Prokaryotes lack a true nucleus, and their DNA is organized in a region called the nucleoid.

2. DNA is negatively charged because of the presence of:
- A. Nitrogenous bases
B. Phosphate groups
C. Histone proteins
D. Amino acids (B)

Explanation : The phosphate groups in DNA give it a negative charge.

3. Histone proteins contain large amounts of which basic amino acids?
- A. Glycine and alanine
B. Lysine and arginine
C. Valine and leucine
D. Tyrosine and tryptophan (B)

Explanation : Histones contain lysine and arginine, which have positively charged side chains.

4. The DNA wrapped around a histone octamer forms:
- A. Chromosome B. Gene
C. Nucleosome D. Chromatin (C)

Explanation : A positively charged histone octamer surrounded by negatively charged DNA forms a nucleosome.

5. A typical nucleosome contains approximately:
- A. 50 base pairs
B. 100 base pairs
C. 200 base pairs
D. 500 base pairs (C)

Explanation : A typical nucleosome consists of a DNA coil containing about 200 base pairs.

6. The "beads on a string" appearance is related to:
- A. DNA replication
B. Chromatin organization
C. Protein synthesis
D. Mutation (B)

Explanation : Nucleosomes appear like beads on a string when observed under an electron microscope, representing chromatin organization.

7. Chromatin that is loosely packed and lightly stained is called:
- A. Heterochromatin B. Euchromatin
C. Nucleosome D. Chromosome (B)

Explanation : Euchromatin is loosely packed chromatin and appears lightly stained.

8. Chromatin that is tightly packed and darkly stained is called:
- A. Euchromatin B. Heterochromatin
C. Nucleoid D. Histone (B)

Explanation : Heterochromatin is highly condensed and appears dark in colour.

9. Additional proteins required for higher-level packaging of chromatin are called:
- A. Ribosomal proteins
B. Enzymes
C. Non-histone chromosomal proteins
D. Structural carbohydrates (C)

Explanation : Non-histone chromosomal proteins help in further packaging and organization of chromatin.

10. In eukaryotic cells, DNA is packaged with the help of:
- A. Histones
B. Lipids
C. Carbohydrates
D. RNA molecules (A)

Explanation : Eukaryotic DNA is associated with positively charged histone proteins for packaging.