

Chapter – 5 | MOLECULAR BASIS OF INHERITANCE

QUIZ-01

1. DNA is a polymer of:

- A. Amino acids
- B. Deoxyribonucleotides
- C. Fatty acids
- D. Glucose molecules (B)

Explanation: DNA is a long polymer made up of deoxyribonucleotides.

2. In DNA, adenine pairs with thymine through:

- A. One hydrogen bond
- B. Two hydrogen bonds
- C. Three hydrogen bonds
- D. Four hydrogen bonds (B)

Explanation: Adenine forms two hydrogen bonds with thymine, while guanine forms three with cytosine.

3. The double helix model of DNA was proposed by:

- A. Griffith and Avery
- B. Watson and Crick
- C. Hershey and Chase
- D. Jacob and Monod (B)

Explanation: Watson and Crick proposed the double helix model of DNA in 1953.

4. In eukaryotes, DNA is wrapped around histone octamer to form:

- A. Ribosome
- B. Nucleosome
- C. Lysosome
- D. Centrosome (B)

Explanation: DNA wraps around positively charged histone octamer to form a nucleosome.

5. The Hershey-Chase experiment proved that genetic material is:

- A. Protein
- B. Lipid
- C. DNA
- D. Carbohydrate (C)

Explanation: Radioactive DNA entered bacterial cells, proving that DNA is the genetic material.

6. DNA replication is called semiconservative because each new DNA molecule has:

- A. Two old strands
- B. Two new strands
- C. One old and one new strand
- D. Only RNA strands (C)

Explanation: In semiconservative replication, each daughter DNA contains one parental strand and one newly synthesised strand.

7. DNA-dependent DNA polymerase catalyses polymerisation only in:

- A. 3' → 5' direction
- B. 5' → 3' direction
- C. Both directions equally
- D. Circular direction only (B)

Explanation: DNA polymerase adds nucleotides only in the 5' → 3' direction.

8. AUG codon codes for:

- A. Methionine
- B. Glycine
- C. Valine
- D. Phenylalanine (A)

Explanation: AUG has dual function; it codes for methionine and also acts as the start codon.

9. In lac operon, the z gene codes for:

- A. Permease
- B. Transacetylase
- C. Repressor
- D. Beta-galactosidase (D)

Explanation: The z gene codes for beta-galactosidase, which breaks lactose into glucose and galactose.

10. DNA fingerprinting is mainly based on:

- A. Ribosomal RNA
- B. VNTR polymorphism
- C. Histone proteins
- D. Peptide bonds (B)

Explanation: DNA fingerprinting uses highly polymorphic repetitive DNA sequences called VNTRs.