



# CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-XII

Subject: Biology

Chapter Name : Molecular Basis of Inheritance (Chap : 5)

Total : 9 Marks (expected) [MCQ-2 Mark, AR-1, SA-2, CBQ-4 Marks]

**Level - 1**

## MCQ Type :

1. The DNA double helix was proposed by  
(A) Watson and Crick      (B) Mendel      (C) Hershey and Chase      (D) Franklin and Wilkins

### Hint : Discovery of DNA

2. DNA is a polymer of repeating units called  
(A) Amino acids      (B) Nucleotides      (C) Fatty acids      (D) Sugars

### Hint : Structure of DNA

3. In DNA, adenine pairs with  
(A) Cytosine      (B) Guanine      (C) Thymine      (D) Uracil

### Hint : Nitrogenous bases

4. The bond between complementary nitrogenous bases is  
(A) Ionic bond      (B) Covalent bond      (C) Hydrogen bond      (D) Peptide bond

### Hint : Structure of DNA

5. The backbone of a DNA strand is made of  
(A) Nitrogen base and sugar      (B) Sugar and phosphate  
(C) Sugar only      (D) Phosphate only

### Hint : Structure of DNA

6. Which enzyme is responsible for DNA replication?  
(A) RNA polymerase      (B) DNA polymerase      (C) Lipase      (D) Restriction enzyme

### Hint : Mechanism of DNA replication

7. DNA replication occurs during  
(A) G<sub>1</sub> phase      (B) G<sub>2</sub> phase      (C) S phase      (D) M phase

### Hint : Interphase of Cell cycle

8. RNA differs from DNA by having  
(A) Thymine instead of uracil      (B) Deoxyribose sugar  
(C) Uracil instead of thymine      (D) Double-stranded structure

### Hint : Structural difference between DNA and RNA

9. The process of formation of RNA from DNA is called  
(A) Translation      (B) Transcription      (C) Replication      (D) Mutation
10. The triplet of bases that codes for an amino acid is called  
(A) Gene      (B) Codon      (C) Anticodon      (D) Allele

### Hint : Genetic code

11. The start codon for protein synthesis is  
Ⓐ UAA                      Ⓑ UGA                      Ⓒ UAG                      Ⓓ AUG

**Hint : Genetic code**

12. The genetic code is  
Ⓐ Overlapping              Ⓑ Ambiguous              Ⓒ Universal              Ⓓ Variable

**Hint : Characteristics of genetic code**

13. The enzyme that joins Okazaki fragments is  
Ⓐ DNA polymerase        Ⓑ RNA polymerase        Ⓒ DNA ligase              Ⓓ Helicase

**Hint : DNA replication – Lagging strand**

14. Which RNA carries amino acids to the ribosome?  
Ⓐ mRNA                      Ⓑ rRNA                      Ⓒ tRNA                      Ⓓ snRNA

**Hint : Transcription, types of RNA**

15. Mutation refers to  
Ⓐ DNA replication                      Ⓑ Protein synthesis  
Ⓒ Change in DNA sequence              Ⓓ Gene expression

**Hint : Errors during DNA replication**

**Assertion and Reason:**

**Directions:** Read the following questions and choose any one of the following four responses.

- A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion.  
B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion.  
C: Assertion is correct but Reason is wrong.  
D: Assertion is wrong but Reason is correct.

1. **Assertion (A):** Adenine always pairs with thymine in DNA.

**Reason (R):** Both are purine bases.

- Ⓐ A                      Ⓑ B                      Ⓒ C                      Ⓓ D

**Hint : Structure of DNA**

2. **Assertion (A):** DNA replication is semi-conservative.

**Reason (R):** Each newly formed DNA molecule has one parental strand and one newly synthesized strand.

- Ⓐ A                      Ⓑ B                      Ⓒ C                      Ⓓ D

**Hint : Salient features of DNA replication**

3. **Assertion (A):** RNA contains ribose sugar.

**Reason (R):** RNA is usually single-stranded.

- Ⓐ A                      Ⓑ B                      Ⓒ C                      Ⓓ D

**Hint : Structure of RNA**

4. **Assertion (A):** The genetic code is universal.

**Reason (R):** The same codon codes for the same amino acid in most organisms.

- Ⓐ A                      Ⓑ B                      Ⓒ C                      Ⓓ D

**Hint : Characteristics of genetic code**

5. **Assertion (A):** The codon AUG acts as a start codon.

**Reason (R):** It codes for the amino acid tryptophan.

- Ⓐ A                      Ⓑ B                      Ⓒ C                      Ⓓ D



2. The four nucleotides of DNA, i.e, AMP, GMP, CMP AND TMP are found floating free in the nucleus. They all are activated by ATP to form deoxyribonucleoside triphosphatases, called ATP, GTP, CTP and TTP. Enzyme required at this step is phosphorylase and the step is called phosphorylation.
- Name the technique used for separating fragments of DNA.
  - Who developed the technique for detecting and screening the nutritional mutant in *Neurospora crassa*.
  - If a sperm cell of a mouse contains 1.8 picograms of DNA in the nucleus, the mass of DNA expected in the nucleus of liver cell would be how many picograms?

## ANSWER

### MCQ

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

### ASSERTION-REASON

1. C	2. A	3. B	4. A	5. C	6. C
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