

Chapter – 5 | Molecular Basis of Inheritance**QUIZ
PART-05**

1. The process of formation of RNA from DNA is called:
- A. Replication B. Translation
C. Transcription D. Mutation (C)

Explanation : Transcription is the process in which a DNA segment is copied into RNA.

2. During transcription, which strand of DNA acts as a template?
- A. Coding strand B. 3' → 5' strand
C. 5' → 3' strand D. Both strands (B)

Explanation : The DNA strand with 3' → 5' polarity acts as the template strand for RNA synthesis.

3. The transcription unit of DNA consists of:
- A. Promoter, structural gene and terminator
B. Exon, intron and gene
C. DNA, RNA and protein
D. Ribosome, mRNA and tRNA (A)

Explanation : A transcription unit contains three main regions: promoter, structural gene and terminator.

4. RNA polymerase synthesizes RNA in which direction?
- A. 3' → 5'
B. 5' → 3'
C. Both directions
D. No fixed direction (B)

Explanation : DNA-dependent RNA polymerase catalyzes RNA polymerization only in the 5' → 3' direction.

5. In bacteria, the production of active mRNA:
- A. Requires splicing
B. Requires capping
C. Does not require processing
D. Requires polyadenylation (C)

Explanation : Bacterial mRNA becomes active without additional processing steps.

6. Which RNA polymerase in eukaryotes transcribes hnRNA?
- A. RNA polymerase I
B. RNA polymerase II
C. RNA polymerase III
D. None of these (B)

Explanation : RNA polymerase II is responsible for transcription of heterogeneous nuclear RNA (hnRNA).

7. Introns are:
- A. Coding sequences present in mature RNA
B. Non-coding sequences removed during RNA processing
C. DNA replication enzymes
D. Promoter regions (B)

Explanation : Introns are intervening sequences removed during splicing and do not appear in mature RNA.

8. The process in which introns are removed and exons are joined is called:
- A. Capping B. Tailing
C. Splicing D. Translation (C)

Explanation : Splicing removes introns and joins exons in a defined order to form mature RNA.

9. In eukaryotic RNA processing, a methyl guanosine triphosphate is added at the:
- A. 3' end B. 5' end
C. Middle of RNA D. Coding region (B)

Explanation : During capping, methyl guanosine triphosphate is added to the 5' end of hnRNA.

10. RNA polymerase III transcribes:
- A. rRNA only
B. hnRNA only
C. tRNA, 5S rRNA and snRNA
D. mRNA only (C)

Explanation : RNA polymerase III produces tRNA, 5S rRNA and snRNA in eukaryotes.