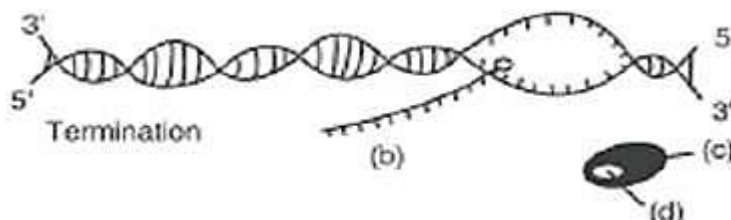


Board – CBSE

Class – 12

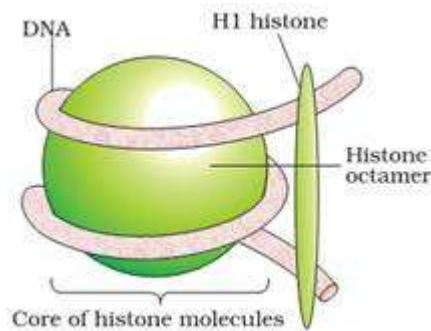
Topic – Molecular Basis of Inheritance

1. The process of termination during transcription in a prokaryotic cell is being represented here. Name the label a, b, c and d.



2. Complete the blanks a, b, c and d on the basis of Frederick Griffith Experiment.
- S strain → inject into mice → (a)
- R strain → inject into mice → (b)
- S strain (heat killed) → inject into mice → (c)
- S strain (heat killed) + R strain (live) → inject into mice → (d)
3. Give two reasons why both the strands of DNA are not copied during transcription.
4. Mention any two applications of DNA fingerprinting.
5. State the 4 criteria which a molecule must fulfill to act as a genetic material.
6. “DNA polymerase plays a dual function during DNA replication” comment on statement?
7. Three codons on mRNA are not recognised by tRNA what are they? What is the general term used for them what is their significance in protein synthesis?
8. Give two reasons why both the strands of DNA are not copied during DNA transcription?
9. Why is it essential that tRNA binds to both amino acids & mRNA codon during protein synthesis?
10. What is peptide bond? How is it formed?
11. Explain what happens in frameshift mutation? Name one disease caused by the disorder?
12. What do you mean by “Central Dogma of Molecular genetics?”
13. Give two reasons why both the strands are not copied during transcription?
14. Why is human Genome project considered as mega project?
15. Why is DNA & not RNA is the genetic material in majority of organisms?
16. Mention any four important characteristics of genetic code.
17. Give six points of difference between DNA and RNA in their structure/chemistry and function.

18. Explain how does the hnRNA becomes the mRNA. OR Explain the process of splicing, capping and tailing which occur during transcription in Eukaryotes.
19. Name the three major types of RNAs, specifying the function of each in the synthesis of polypeptide.
20. Enlist the goals of Human genome project.
21. A tRNA is charged with the amino acid methionine.
 - (i) Give the anti-codon of this tRNA.
 - (ii) Write the Codon for methionine.
 - (iii) Name the enzyme responsible for binding of amino acid to tRNA.
22. Illustrate schematically the process of initiation, elongation and termination during transcription of a gene in a bacterium.
23. What is transformation? Describe Griffith's experiment to show transformation? What did he prove from his experiment?
24. The base sequence on one strand of DNA is ATGTCTATA
 - (i) Give the base sequence of its complementary strand.
 - (ii) If an RNA strand is transcribed from this strand what would be the base sequence of RNA?
 - (iii) What holds these base pairs together?
25. Two claimant fathers filed a case against a lady claiming to be the father of her only daughter. How could this case be settled identifying the real biological father?
26. The length of DNA in an eukaryotic cell is $N \times 2.2 \text{ m}$ How can such a huge DNA be packaged in a nucleus of micrometer in diameter.



27. A tRNA is charged with amino acid methionine.
 - i) At what site in the ribosome will the tRNA bind?
 - ii) Give the anticodon of this tRNA?
 - iii) What is the mRNA codon for methionine?
 - iv) Name the enzyme responsible for this binding?
28. What are the three types of RNA & Mention their role in protein Synthesis?
29. Define bacterial transformation? Who proved it experimentally & how?

30. Describe the continuous & discontinuous Synthesis of DNA?

