QB365 Question Paper Software
12th Standard - Biology
Molecular Basis of Inheritance Assertion and reason

Exam Time: 00:20 Hrs | Roll No: |

Date: 27/09/2025 | Total Marks: 10

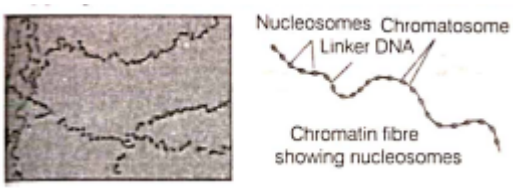
Assertion and reason 10 x 1 = 10

1. **Assertion:** R-type of Pneumococcus is non-virulent.
   Reason: R-type of Pneumococcus can be virulent by having transformation with S - type of Pneumococcus.
   Codes :
   (a) Both assertion and reason are true and reason is the correct explanation of assertion.
   (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
   (c) Assertion is true but reason is false.
   (d) Both assertion and reason are false

2. **Assertion:** Core enzyme catalyses chain elongation of RNA.
   Reason: The presence of sigma factor is required for initiation of transcription.
   Codes :
   (a) Both assertion and reason are true and reason is the correct explanation of assertion.
   (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
   (c) Assertion is true but reason is false.
   (d) Both assertion and reason are false

3. **Assertion:** UAA, UAG and UGA terminate protein synthesis.
   Reason: They are not recognised by tRNA.
   Codes :
   (a) Both assertion and reason are true and reason is the correct explanation of assertion.
   (b) Both assertion and reason are true but reason is not the correct explanation of assertion.
   (c) Assertion is true but reason is false.
   (d) Both assertion and reason are false.

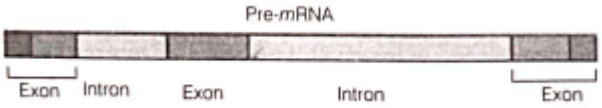
4. Given below is the nucleosome model in which the histone proteins are bounded by DNA. One nucleosome contains about 200 base pairs of DNA helix. Study the structure and comment upon the appropriateness of the Assertion and the Reason



Assertion (A) : Histones are basic in nature.
Reason (R) : DNA being negatively charged, wrap around histone to octamer. These are

rich in the amino acids lysine and arginine.
(a) If both A and Rare true and R is the correct explanation of A
(b) If both A and R are true, but R is not the correct explanation of A
(c) If A is true, but R is false
(d) If A is false, but R is true

5. Given below picture represents heterogenous nuclear RNA (in RNA) that refers to the bulk of transcribed RNA hnRNA undergoes processing to mRNA. Based on the above information and given pictures comment upon the appropriateness of Assertion and Reason.



Assertion (A) : hnRNA is larger than mRNA.
Reason (R) : hnRNA has non-coding introns which are not required for translation.
(a) If both A and Rare true and R is the correct explanation of A
(b) If both A and R are true, but R is not the correct explanation of A
(c) If A is true, but R is false
(d) If A is false, but R is true

6. Assertion (A) : A fully processed hnRNA is called mRNA.
Reason (R) : hnRNA undergoes, splicing and other post-transcriptional like modifications, capping and tailing
(a) If both A and Rare true and R is the correct explanation of A
(b) If both A and R are true, but R is not the correct explanation of A
(c) If A is true, but R is false
(d) If A is false, but R is true

7. **Assertion:** Histones are basic in nature.
Reason: Histones are rich in the amino acids lysine and arginine.
Codes:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

8. **Assertion:** Template or antisense strand, having 3′ → 5′ polarity takes part in transcription.
Reason: Non-template or sense strand, having 5′ → 3′ polarity, does not take part in transcription.
Codes:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

9. **Statement I:** In eukaryotes, both exons and introns are transcribed to form hnRNA
   Statement II : Splicing is required in prokaryotes
   Codes:
   a) Statement I is True, Statement II is True
   b) Statement I is True, Statement II is False
   c) Statement I is False, Statement II is False
   d) Statement I is False, Statement II is True

10. **Statement I:** BAC& YAC are the vectors used for studying the sequencing of DNA
    Statement II : 100 percent of base sequence among humans is the same.
    Codes:
    a) Statement I is True, Statement II is True
    b) Statement I is True, Statement II is False
    c) Statement I is False, Statement II is False
    d) Statement I is False, Statement II is True