Chapter 02 Molecular Basis of Inheritance

Practice Section-01

Q.1 Purines found both in DNA and RNA are
(1) Cytosine and thymine (2) Adenine and thymine
(3) Adenine and guanine (4) Guanine and cytosine.

Q.2 The sequential events that occur during protein synthesis are _____.
(1) Protein $\xrightarrow{\text{Translation}}$ RNA $\xrightarrow{\text{Transcription}}$ DNA
(2) DNA $\xrightarrow{\text{Transcription}}$ RNA $\xrightarrow{\text{Translation}}$ Protein
(3) RNA $\xrightarrow{\text{Transcription}}$ DNA $\xrightarrow{\text{Translation}}$ Protein
(4) DNA $\xrightarrow{\text{Translation}}$ Protein $\xrightarrow{\text{Transcription}}$ DNA

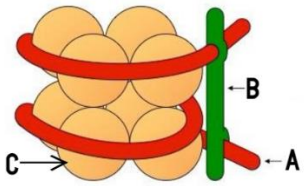
Q.3 If the total amount of adenine and thymine in a double stranded DNA is 55%, the amount of guanine in this DNA will be
(1) 45% (2) 27.5% (3) 25% (4) 22.5%

Q.4 The double helix of DNA is made of polynucleotide chains wherein backbone constituted by sugar-phosphate and the bases are projected: –
(1) Inside (2) Outside
(3) One base inside and the other outside (4) Bases remain in line of sugar-phosphate

Q.5 In one nucleosome, which one of the following histone molecule is not double?
(1) H_4 (2) H_3 (3) H_2 (4) H_1

Q.6 The association of histone H_1 with a nucleosome indicates that
(1) DNA replication is occuring (2) The DNA is condensed into a chromatin fibre
(3) The DNA double helix is exposed (4) Transcription is occurring.

Q.7 Refer the given figure and select the correct option regarding its parts labelled as A, B and C



(1) A-Histone octamer, C-DNA (2) B-H_1 histone, C-Histone octamer
(3) A-H_1 histone, B-DNA (4) A-Histone octamer, C-H_1 histone

Q.8 The distance between two consecutive base pairs in B DNA is
(1) 0.34 nm (2) 3. 4 nm (3) 34 nm (4) 340 nm

Practice Section-02

Q.1 The experimental proof for semi-conservative replication of DNA was first shown in a
(1) Fungus (2) Bacteria (3) Plant (4) Virus.

Q.2 Select the correct match.
(1) Ribozyme - Nucleic acid
(2) F_2 × Recessive parent - Dihybrid cross
(3) T.H. Morgan - Transduction
(4) G. Mendel - Transformation

Q.3 The final proof for DNA as the genetic material came from the experiments of
(1) Hershey and Chase
(2) Avery, MacLeod and McCarty
(3) Hargobind Khorana
(4) Griffith.

Q.4 A molecule that can act as a genetic material must fulfill the traits given below, except
(1) It should be able to express itself in the form of 'Mendelian characters'
(2) It should be able to generate its replica
(3) It should be unstable structurally and chemically
(4) It should provide the scope for slow changes that are required for evolution.

Q.5 DNA and RNA comprise of
(1) Sugar, Phosphate, Base
(2) Sugar, Phosphate
(3) Base, Phosphate
(4) Sugar, Base

Q.6 Match the following RNA polymers with their transcribed products.
(A) RNA polymerase I (i) tRNA
(B) RNA polymerase II (ii) rRNA
(C) RNA polymerase III (iii) hnRNA
Select the correct option from the following.
(1) A-i, B-iii, C-ii (2) A-i, B-ii, C-iii (3) A-ii, B-iii, C-i (4) A-iii, B-ii, C-i

Q.7 Which of the following RNAs should be most abundant in animal cell?
(1) tRNA (2) mRNA (3) miRNA (4) rRNA

Q.8 During DNA replication, Okazaki fragments used to elongate
(1) The lagging strand towards replication fork
(2) The leading strand away from replication fork
(3) The lagging strand away from the replication fork
(4) The leading strand towards replication fork.

Q.9 Select correct statement from the following:
(1) In a DNA molecule, the two strands are antiparallel and non-complementary.
(2) The rRNA is always present in variously folded form.
(3) During DNA replication, leading strand is formed at the strand having polarity $3' \rightarrow 5'$ while lagging strand is formed at the strand having parity $5' \rightarrow 3'$
(4) The mRNA molecule may be straight or coiled upon itself to form a hairpin like shape.

Q.10 Taylor conducted the experiments to prove semi-conservative mode of chromosome replication on
(1) *Vinca rosea*
(2) *Vicia faba*
(3) *Drosophila melanogaster*
(4) *E. coli.*

ANSWER KEY

PRACTICE SECTION-01

Que.	1	2	3	4	5	6	7	8
Ans.	3	2	4	1	4	2	2	1

PRACTICE SECTION-02

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	1	1	3	1	3	4	3	2	2