2023

Time - 3 hours

Full Marks - 60

*Answer **all groups** as per instructions.*
Figures in the right hand margin indicate marks.
Draw labelled diagrams wherever necessary.

GROUP – A

1. Fill in the blanks. (all) [1 × 8

(a) Single stranded radioactive RNA or DNA is called _____.

(b) DNA → m-RNA → Protein is otherwise known as _____.

(c) _____ is the initiation codon during protein synthesis.

(d) The process of excision of introns and of rejoining of exons to produce the final m-RNA is called _____.

(e) The actual site of transcription initiation is known as _____ gene.

(f) A plasmid or a phage used to carry a desired DNA to a host cells is _____.

(g) Lac operon was first proposed by _____.

(h) In some plant and animal viruses, the RNA functions as a template strand to transcribe DNA and the process is called _____.

GROUP – B

2. Answer any eight of the following questions within two to three sentences each. [1½ × 8

(a) State Clover-leaf model.

(b) What is operon ?

(c) What is split gene ?

(d) What is Palindrome ?

(e) Explain supergene.

(f) What is Junk DNA ?

(g) State mismatch repair.

(h) What is Karyotype ?

(i) What is the function of aminoacyl-tRNA synthetase ?

(j) Mention the peculiarities of circular DNA.

GROUP – C

3. Answer any eight of the following questions within 75 words each. [2 × 8

(a) State Eukaryotic Transcription.

(b) Write the formation and uses of Polysomes.

(c) Why is RNA used as a primer during replication ?

(d) What is alternate splicing ?

(e) Explain pyrimidine dimerisation.

(f) What is degeneracy of genetic code ?

(g) Write the differences between Prokaryotic and Eukaryotic translation ?

(h) How the processing of t-RNA takes place ?

(i) Why is codon triplet in nature ?

(j) What are activator and repressor molecules ?

GROUP – D

*Answer **all** questions within 500 words each.*

4. Describe Watson and Crick's model of DNA structure. [6

OR

Write notes on within 250 words each. [3 × 2

(a) Bidirectional replication

(b) Replication of telomeres

5. Describe the process of protein synthesis in Prokaryotes. [6

OR

Write notes on within 250 words each. [3 × 2

(a) Synthesis of m-RNA

(b) Salient features of genetic code

6. Discuss the molecular mechanism of Exon Shuffling. [6

OR

Write notes on within 250 words each. [3 × 2

(a) RNA editing

(b) Concept of introns and exons

7. Discuss the mechanism of transcription regulation in Eukaryotes. [6

OR

Write notes on within 250 words each. [3 × 2

(a) RNA interference

(b) Lac operon