

4th Semester Examination, 2022

Time : 3 hours

Full Marks : 60

Answer from all the Parts as per direction

The figures in the right-hand margin indicate marks

*Candidates are required to answer in their own words
as far as practicable*

(MOLECULAR BIOLOGY)

PART – I

1. Answer *all* the following questions in *one* word :

1 × 8

(a) The reason behind the antiparallel strand of DNA is _____.

(b) The proofreading enzyme in DNA replication is _____.

(Turn Over)

(2)

- (c) The nucleic acid synthesis takes place in which direction ?
- (d) The process of modification of pre mRNA is known as _____.
- (e) The enzyme required for transcription is _____.
- (f) Sigma factor is a component of _____.
- (g) In eukaryotes, translation is initiated by binding of ribosome to the _____.
- (h) _____ is the energy rich molecule required for initiation of translation.

PART – II

2. Answer any *eight* of the following questions within *two to three* sentences :

$$1\frac{1}{2} \times 8$$

- (a) What is denaturation ?
- (b) Cot curve.

(3)

- (c) What is RNA priming ?
- (d) Define adaptor hypothesis.
- (e) What is Poly A tail ?
- (f) Role of operator gene.
- (g) Function of Introns.
- (h) Name two inhibitors of protein synthesis.
- (i) What is charging of t-RNA ?
- (j) What is the role of heat shock protein ?

PART – III

3. Answer any *eight* of the following within 75 words : 2 × 8

- (a) Chloroplast DNA
- (b) Heterochromatin

(4)

- (c) Q model of replication
- (d) Salient features of genetic code
- (e) Splicing pathway
- (f) Steroid and peptide hormones
- (g) Gene silencing
- (h) Proteins involved in initiation of translations.
- (i) Post-translational modification of proteins.
- (j) Fidelity of translation.

PART – IV

**Answer all the following questions within
500 words :**

6 × 4

4. Prove that DNA as the carrier of genetic information.

Or

Describe the structure and function of DNA.

5. Discuss the semiconservative method of DNA replication.

Or

Briefly describe the processing and modification of RNA.

6. Describe the regulation of transcription in prokaryotes.

Or

Discuss the mechanism of transcription in eukaryotes.

7. Describe the structure and assembly of Ribosome.

Or

Discuss various steps of protein synthesis.
