Total No. of Printed Pages—3

4 SEM TDC BOTH (CBCS) C 8

2024

(May/June)

BOTANY

(Core)

Paper : C–8

(Molecular Biology)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer of the following : 1×5=5

(a) The clover leaf model of tRNA was proposed by Halley *et al* / Kim *et al* / Erwin Chargaff / Linus Pauling.

(b) The number of base pairs per turn is 12 in Z-DNA / A-DNA / B-DNA / C-DNA.

(c) The D-loop model of DNA replication is observed in Chloroplast DNA / Mitochondrial DNA / Nuclear DNA / Viral DNA.

(d) Poly-cytosine RNA sequence codes for only Phenylalanine / Glycine / Lysine / Proline.

(e) The initiation complex I of translation is formed by the hydrolysis of 3 molecules of GTP / 2 molecules of GTP / 1 molecule of GTP / 2 molecules of ATP.

2. Write briefly on the following (any *three*) : 4×3=12

(a) Chloroplast DNA

(b) Licensing factors

(c) Inhibitors of protein synthesis

(d) TATA Box

(e) Split gene

3. "DNA replication is semi-conservative and bidirectional." Discuss the experimental evidence in favour of this statement. 12

(*Continued*)

Or

Distinguish between : 4×3=12

(a) Denaturation and Renaturation of DNA

(b) Prokaryotic Transcription and Eukaryotic Transcription

(c) B-DNA and Z-DNA

4. Describe the experiment which demonstrates that RNA is the genetic material in TMV. List the differences between DNA and RNA. 8+4=12

Or

Describe different known mechanisms of RNA splicing for group I and group II introns. 12

5. What is central dogma? Describe the key experiment establishing the central dogma. 4+8=12

Or

Write explanatory notes on the following : 6+6=12

(a) Gene silencing

(b) Fidelity of translation

★★★