

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.

( 2 )

- (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 / 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

( 3 )

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

★ ★ ★