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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*

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.

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(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 / 1 molecule of GTP / 2 molecules of ATP.
2. Write briefly on the following (any three) : $4 \times 3 = 12$
- (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 : $4 \times 3 = 12$
- (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
