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4 SEM TDC BOTH (CBCS) C 8

2023

(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 two strands of DNA are held together by—covalent bond/ionic bond/hydrogen bond/coordinate bond.
- (b) DNA synthesis in prokaryotes is brought about by—DNA polymerase-I/DNA polymerase-II/both DNA polymerase-I and II/None of the above.

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(Turn Over)

(2)

- (c) The new strand of DNA is replicated in—5'-3' direction/3'-5' direction/5'-5' direction/3'-3' direction.
- (d) Which of the following is not a termination codon? (UAG/UAA/UAC/UGA)
- (e) Split genes consist of—introns only/exons only/both introns and exons/both DNA and RNA.

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

- (a) Physical structure of DNA double helix
- (b) Properties of genetic code
- (c) RNA polymerase
- (d) Chemical nature of gene
- (e) RNA and protein synthesis

3. What are nucleic acids? Describe different types of DNA and mention the functions of DNA.
3+(5+4)=12

Or

Distinguish between :
4×3=12

- (a) Unidirectional and bidirectional DNA replication

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(Continued)

(3)

- (b) Replication and Transcription
- (c) Inducible operon and Repressible operon

4. What is transcription? Describe the molecular mechanism of transcription in prokaryotes.
2+10=12

Or

How is the regulation of gene expression maintained in organisms? Describe the lac operon mechanism of regulation of gene expression in prokaryotes.
3+9=12

5. Explain the process of translation in prokaryotes. State any four differences from eukaryotic translation.
8+4=12

Or

Write explanatory notes on the following :
6×2=12

- (a) Structure and biological importance of tRNA
- (b) Genetic code

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