

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.

(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

(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
