

**2024/TDC (CBCS)/EVEN/SEM/
BTCHCC-401T/004**

TDC (CBCS) Even Semester Exam., 2024

BIOTECHNOLOGY

(4th Semester)

Course No. : BTCHCC-401T

(Molecular Biology)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

1. Answer any two of the following questions : $2 \times 2 = 4$

- (a) What do you mean by semiconservative nature of DNA replication?
- (b) Write a note on DNA polymerase.
- (c) Define replisome.

2. Answer any one of the following questions : 6

- (a) Describe the process of DNA replication in eukaryotes.

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(Turn Over)



(2)

- (b) Write a note on the structure of DNA.
Give a short account on rolling circle replication. 4+2=6

UNIT—II

3. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) Define DNA damage.
(b) What do you mean by depurination?
(c) Write a note on photoreactivation.

4. Answer any *one* of the following questions : 6

- (a) Write a note on the cause of DNA damage.
(b) Discuss the mechanism of base excision repair and mismatch repair. 3+3=6

UNIT—III

5. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) Write a note on the structure of prokaryotic ribosomal RNA.
(b) Write down the role of sigma factor.
(c) Define enhancer.

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(3)

6. Answer any *one* of the following questions : 6

- (a) Describe the process of initiation, elongation and termination of RNA chains in prokaryotes. $2+2+2=6$
(b) What are transcription factors? Add a note on the mechanism of transcription, initiation and elongation in eukaryotes. $2+4=6$

UNIT—IV

7. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) What is pre-mRNA?
(b) What do you mean by intron and exon?
(c) Write a note on pre-mRNA splicing.

8. Answer any *one* of the following questions : 6

- (a) Describe the process of 5'-capping of mRNA. Add a note on polyadenylation. $4+2=6$
(b) Write about prokaryotic rRNA splicing. Add a note on tRNA splicing. $4+2=6$

UNIT—V

9. Answer any *two* of the following questions : $2 \times 2 = 4$

- (a) What do you mean by gene expression?

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(4)

- (b) What are inhibitors of translation?
- (c) Write a note on post-translational modifications of proteins.

10. Answer any one of the following questions : 6

- (a) Define genetic code. What are the characteristics of a genetic code? 4+2=6
- (b) Write down the mechanism of translation, initiation, elongation and termination in eukaryotes.

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