



**2023/TDC(CBCS)/EVEN/SEM/
BOTHCC-401T/225**

TDC (CBCS) Even Semester Exam., 2023

BOTANY

(Honours)

(4th Semester)

Course No. : BOTHCC-401T

(Molecular Biology)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

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

SECTION—A

Answer any ten of the following questions : $2 \times 10 = 20$

- 1. Differentiate between B-DNA and Z-DNA.**
- 2. Write two key features of chloroplast DNA.**
- 3. Write two important findings of Griffith's experiment.**



(2)

(3)

4. What do you mean by bidirectional mode of DNA replication?
5. What is rolling circle model of DNA replication?
6. Write the functions of DNA polymerase-I and helicase.
7. What is genetic code? Write one function of genetic code.
8. What do you mean by central dogma of protein synthesis?
9. Differentiate between conservative and semiconservative modes of DNA replication.
10. Differentiate between intron and exon.
11. What is ribozyme? Write its function.
12. What do you mean by spliceosome?
13. What do you mean by methylation of protein?

14. What is transcription factor? Write its function.
15. How does termination of protein synthesis take place?

SECTION—B

Answer any *five* of the following questions : $6 \times 5 = 30$

16. Discuss double-helical structure of DNA.
What is phosphodiester bond? $5+1=6$
17. Write two key features of mitochondrial DNA.
Add a note on euchromatin. $3+3=6$
18. Write in detail about the enzymes involved in DNA replication with their functions. 6
19. Write notes on the following : $3+3=6$
 - (a) RNA priming
 - (b) θ (theta) mode of replication
20. Write about the characteristic features of genetic code. What is stop codon? 6
21. What is operon? How is tryptophan operon regulated? $1+5=6$



(4)

22. What is split gene? Write about the structure and function of split gene. $1+2+3=6$
23. Write notes on the following : $3+3=6$
- (a) Splicing
 - (b) RNA editing
24. Write the functions of the following in protein synthesis : $2 \times 3 = 6$
- (a) rRNA
 - (b) Aminoacyl tRNA synthetases
 - (c) mRNA
25. Write the function of genetic code in protein synthesis. Add a note on inhibitors of protein synthesis. $3+3=6$
