



**2021/TDC/CBCS/ODD/
ZOOHCC-501T/033**

**TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022**

ZOOLOGY

(5th Semester)

Course No. : ZOOHCC-501T

(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* questions of the following : $2 \times 10 = 20$

1. Differentiate between nucleoside and nucleotide.
2. Name the different types of RNA. Mention their functions.
3. Mention the basic differences between DNA and RNA.



(2)

4. Define replication. What do you mean by semi-conservative and dispersive modes of replication?
5. Define primosome. What are Okazaki fragments?
6. What are leading strand and lagging strand?
7. Write the difference between apoenzyme and coenzyme.
8. What are the different types of RNA polymerase present in eukaryotes?
9. Define transcription unit in prokaryotes.
10. Define Wobble hypothesis.
11. Name the proteins involved in the process of initiation of translation in prokaryotes.
12. Name the inhibitors of protein synthesis.
13. What are split genes?
14. Define introns and exons.
15. Define lac operon.

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(Continued)

(3)

SECTION—B

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

16. Describe the Watson and Crick model of DNA with proper illustration. 6
17. Write a detailed note on the chemical composition of DNA molecule. What are the different alternative forms of DNA available in nature? 4+2
18. Draw and describe the experiment done by Meselson and Stahl (1958) to prove semi-conservative replication in DNA. 6
19. Describe the process of DNA replication in prokaryotes with proper diagram. 6
20. Discuss in detail the mechanism of transcription in prokaryotes with illustration. 6
21. What are the different types of transcription factors used in the eukaryotic transcription? Add a note on the functions of each of the transcription factors. 3+3=6

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(Turn Over)



(4)

22. Write notes on any *two* of the following :

3×2=6

- (a) Degeneracy of the genetic code
- (b) Difference between prokaryotic and eukaryotic translation
- (c) Aminoacyl tRNA synthetase

23. Discuss the process of protein synthesis in prokaryotes.

6

24. Write short notes on any *two* of the following :

3×2=6

- (a) Processing of tRNA
- (b) Exon shuffling
- (c) Alternative splicing

25. Discuss various steps of post-transcriptional modifications of mRNA in eukaryotes.

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