



**2022/TDC/ODD/SEM/
ZOOHCC-501T/033**

TDC (CBCS) Odd Semester Exam., 2022

ZOOLOGY

(Honours)

(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*

UNIT—I

1. Answer any *two* questions from the following : 2×2=4
- (a) Distinguish between nucleoside and nucleotide.
- (b) Define Chargaff's rule.
- (c) What is heterogeneous nuclear RNA (hnRNA)?



UNIT—II
(25)

(13)

2. Answer any *one* question from the following : 6
- (a) Describe the chemical composition of deoxyribonucleic acid (DNA). Write at least four differences between DNA and RNA. 4+2=6
- (b) What are the different types of RNA found in an eukaryotic cell? Add a note on the clover-leaf model of tRNA. 3+3=6

UNIT—II

3. Answer any *two* questions from the following : 2×2=4
- (a) Define 'semiconservative' and 'conservative' modes of DNA replication.
- (b) What are meant by the terms 'primer' and 'template' in DNA replication?
- (c) What do you understand by bi-directional DNA replication?
4. Answer any *one* question from the following : 6
- (a) Describe the various steps of DNA replication in prokaryotes with proper illustration.

- (b) Write short notes on the following : 3×2=6
- (i) Role of DNA polymerases in eukaryotic replication.
- (ii) Replication of telomeres.

UNIT—III

5. Answer any *two* questions from the following : 2×2=4
- (a) Write the differences between holo-enzyme and core enzyme of RNA polymerase.
- (b) Define a transcription unit.
- (c) What are riboswitches?
6. Answer any *one* question from the following : 6
- (a) Write in detail about the various steps of transcription in prokaryotes with appropriate diagram.
- (b) Write short notes on the following : 3×2=6
- (i) Eukaryotic and prokaryotic RNA polymerases
- (ii) Initiation of transcription in eukaryotes



(4)

UNIT—IV

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

- (a) Define Wobble hypothesis.
- (b) What is the advantage of degeneracy of the genetic code?
- (c) What is Shine-Dalgarno sequence?

8. Answer any *one* question from the following : 6

- (a) Give a detailed description of initiation of translation in prokaryotes with proper illustration.
- (b) Write short notes on the following : $3 \times 2 = 6$
 - (i) Aminoacyl tRNA synthetase and its role in protein synthesis
 - (ii) Difference between prokaryotic and eukaryotic translations

UNIT—V

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

- (a) Define introns and exons.

(5)

(b) What is operon? Give one example.

(c) What do you understand by RNA editing?

10. Answer any *one* question from the following : 6

- (a) Write short notes on the following : $3 \times 2 = 6$
 - (i) Alternative splicing mechanism
 - (ii) Processing of tRNA
- (b) What is inducible operon? Briefly discuss the lac operon system. $1 + 5 = 6$
