



**2020/TDC(CBCS)/ODD/SEM/
ZOOHCC-501T/033**

**TDC (CBCS) Odd Semester Exam., 2020
held in March, 2021**

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

1. Answer any *ten* of the following (short answer-type questions) : $2 \times 10 = 20$

- (a) What is the reverse central dogma?
- (b) Differentiate between nucleoside and nucleotide.
- (c) Name the different types of RNA and mention their functions.
- (d) Write the differences between DNA and RNA.



(2)

- (e) Define 'semiconservative' mode of DNA replication.
- (f) What are Okazaki fragments?
- (g) Define the terms 'primar' and 'template'.
- (h) Name the isotopes used in the Meselson and Stahl's experiment.
- (i) Name the different types of RNA polymerases present in enkaryotes.
- (j) What are general transcription factors?
- (k) What do you understand by siRNA?
- (l) What is polyadenylation of mRNA?
- (m) What do you understand by genetic code?
- (n) Define Wobble hypothesis.
- (o) Name the inhibitors of protein synthesis.
- (p) Write the functions of aminoacyl tRNA synthetase.
- (q) What are split genes?
- (r) What do you understand by the term 'exon shuffling'?
- (s) What is a repressor protein?
- (t) What are exons and introns?

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(Continued)

(3)

SECTION—B

Answer any *five* of the following (long answer-type questions) : 6×5=30

2. Describe the double-helical structure of DNA with diagram and write its functions. 5+1=6
3. Write short notes on the following : 3×2=6
 - (a) Salient features of RNA
 - (b) Chemical composition of DNA
4. Describe the process of replication of DNA in prokaryotes with proper illustration. 5+1=6
5. Differentiate between replication in prokaryotes and eukaryotes. Add a brief note on bidimensional and semi-discontinuous replications of DNA. 2+4=6
6. Discuss in detail the mechanism of transcription in prokaryotes with illustration. 6
7. 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. 6

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(Turn Over)



((4))

8. What is the function of ribosomes in protein synthesis? In brief, write about the structure and assembly of ribosomes in prokaryotes.

1+5=6

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

3×2=6

(a) Elongation of polypeptide chain in eukaryotes

(b) Difference between prokaryotic and eukaryotic translations

(c) Proteins involved in the initiation of translation in eukaryotes

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

6

11. Who first described the operon model for explaining gene regulation? Briefly write about the lac operon model in *E.coli* with diagram.

1+5=6

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