

6/ZOO-353(Th) Syllabus-2023

2026

(May-June)

FYUP : 6th Semester Examination

ZOOLOGY

(Molecular Biology and Genetic Engineering)

(ZOO-353)

(Theory)

Marks : 56

Time : 3 hours

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

Answer question No. 1, which is compulsory
and any **four** from the rest.

1. Write notes on any *four* of the following :

3×4=12

- (a) Central dogma of molecular biology
- (b) Split genes
- (c) Restriction enzymes
- (d) Comparison between prokaryotic and eukaryotic translation

26D/1922

(Turn Over)

(2)

- (e) Polyadenylation signals, terminator region and regulatory elements. Polyadenyl region and
- (f) Applications of DNA fingerprinting (f) Application
2. What is lac operon? Explain the process of regulation of gene expression involved in lac operon with the help of diagrams. 2+9=11
3. What are cloning vectors? Discuss with the help of diagrams the fundamental process of molecular cloning with plasmid vectors. 2+9=11
4. Briefly describe the RNA polymerase and accessory proteins in prokaryotes. Explain with diagrams the process of transcription in prokaryotes. 3+8=11
5. (a) Write a note on basics of PCR and southern blotting techniques. 6
- (b) Explain the principles and applications of DNA fingerprinting. 5
6. What is DNA repair? Discuss with the help of diagrams the different DNA repair systems in eukaryotes. 2+9=11
7. (a) Give an overview of the enzymes and proteins involved in DNA replication in prokaryotes. 6
- (b) With the help of diagrams, discuss the Meselson and Stahl experiment of DNA replication in prokaryotes. 5

(3)

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

$5\frac{1}{2} \times 2 = 11$

- (a) Components of the translational machinery in prokaryotes
- (b) Overlapping genes
- (c) Causes of mutation
- (d) Genomic library and cDNA library
