

- (b) Give the significance of *Escherichia coli* genome database (*EcoCyc*). (5)
5. (a) Give the significance of *Arabidopsis thaliana* as a model for plant molecular genetics. (8)
- (b) Discuss the role of Lemur/ Rhesus monkey as a model organism for primate research. (7)
6. Write short notes on (**any three**) of the following : (5×3=15)
- (a) Role of *Mus-musculus* as a model for human genetic disorders
- (b) *Lumbricus terrestris* as a bio-indicator for soil contamination and heavy metal toxicity
- (c) Life cycle of *Lambda* phage
- (d) *Xenopus laevis* as a model organism for development biology studies
- (e) Importance of Tetrahymena Stock Centre (TSC)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5847

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Unique Paper Code : 2234000014

Name of the Paper : GE – Model Organisms

Name of the Course : **GE-Zoology Theory Exam
May/June2026**

Semester : VI (NEP-UGCF)

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Four** questions in all. Question No. **1** is compulsory.
3. Attempt **all** the parts of a question together.

1. (a) Define the following : (4)

(i) Dauer larva stage

(ii) Ascospores

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(iii) Logarithmic phase

(iv) Transgenic Organism

(b) Fill in the blanks : (5)

(i) BLAST is a tool used to compare _____ sequences.

(ii) *Danio rerio* belongs to _____ class of vertebrates.(iii) *Drosophila* is cultured in the lab using _____ medium.

(iv) _____ is an important tool for gene editing.

(v) The full form of MOEFCC is _____ .

(c) True or false : (4)

(i) The integrated form of lambda DNA is called a plasmid.

(ii) *Lumbricus terrestris* is a unisexual organism.(iii) *Tetrahymena thermophila* shows nuclear dimorphism.(iv) *Xenopus laevis* is an allotetraploid species.

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(d) Match the organism with its database : (2)

i) *Danio rerio* A. Fly baseii) *Caenorhabditis elegans* B. Xenbaseiii) *Drosophila* C. Worm base

iv) Frog D. Z-fin

2. (a) Give the biology and lifecycle of *Caenorhabditis elegans*. Discuss its scientific contribution in research. (10)

(b) With the help of suitable examples, differentiate between a model organism and an experimental organism and describe the distinguishing features of model organisms in research? (5)

3. (a) Discuss the morphology, lifecycle and maintenance of *Drosophila melanogaster* cultures in laboratory? (9)

(b) Discuss the role of regulatory bodies in animal research? (6)

4. (a) Describe the lifecycle and industrial applications of *Saccharomyces cerevisiae*. (10)

P.T.O.