

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI

Integrated Biology (BIO F214)

First Semester 2023-24

Mid Semester Test (Closed Book) – Part II

Date: 14/10/2023

Total Duration (Part I + Part II): 90 min

Max Marks: 60

NAME:

ID NO.:

INVIGILATOR SIGN:

Note: *This is an inbuilt paper for 40 marks. For each question, provide your answer in the given space. There are eight questions, each carrying 5.0 marks.*

Q1. You are studying a population of geese in which there are two color phases, brown and gray. Color in this species is controlled by a single gene, with brown being dominant to gray. A random sample of 250 geese shows that 210 are brown. What percentage of the brown geese are heterozygous? Show calculations clearly. (*Assume that the population is in Hardy-Weinberg equilibrium.*)

Q2. What is meant by polymorphism in context of insect populations? Explain briefly the biochemical basis for the same.

Q3. What is molecular clock, and why could it give erroneous results at times? Mention briefly.

Q4. What are the four major anatomical evidences for evolution, as discussed in class? Mention briefly.

Q5. Briefly differentiate between the different species concepts discussed in class.

Q6. Using the island archipelago example, discuss the two (different) possible routes that speciation can take during adaptive radiation.

Q7. What is bushmeat and what is it's relation to evolution of HIV? Mention briefly.

Q8. Critically evaluate Prof. Jared Diamond's hypothesis to explain inequality among human societies. Present argument(s) both for and against.