

# EEL851: Minor I (Part A; Evolution)

9th February, 2014

Maximum Marks: 20

1. Explain why Mendel's experiments with pea plants discredited the Lamarckian notion of evolution. **[3]**
2. Suppose you wish to use a genetic algorithm to study the evolution of populations of individuals whose dynamics can be represented as follows:

$$\begin{aligned}\frac{da(t)}{dt} &= w_0 + w_1a(t) + w_2b(t) \\ \frac{db(t)}{dt} &= w_3 + w_4a(t) + w_5b(t)\end{aligned}$$

Here  $w_0, \dots, w_5$  are individual-specific parameters. Given this information, suggest answers to the following: **[2]**

- (a) What would be your 'chromosome' representation for a given individual?
- (b) How would you implement 'crossover' in your genetic algorithm?