

# Final Exam MMG 892 Sec. 004 – Evolutionary Dynamics and Modeling, Fall 2011

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1) What is a fitness landscape?

**Fitness as a function of either the genotype or the phenotype.**

2) What question does Sewall Wright's Shifting Balance Theory address?

**How a population can cross valleys of lower fitness in the fitness landscape.**

3) Describe the three main modes of speciation: sympatric, parapatric, and allopatric.

**S: no geographical barriers to mating.**

**P: mating possible in a narrow hybrid zone only.**

**A: geographic barriers preventing mating.**

4) Explain what canalization means in genetics.

**Several distinct genotypes resulting in the same phenotype.**

5) Explain what modularity means in network theory.

**Nodes forming clusters that are more densely connected compared to other nodes.**

6) What is the two-fold cost of sex?

**Offspring only has half of one parent's alleles.**

7) How do organisms in Avida (aka Avidians) earn fitness?

**By executing logical functions.**

8) What is a quasispecies?

**A population/group of related organisms where many offspring have one or several new mutations.**