

Name:

ID#:

Section: 455 or 555

2	8	10	

Directions – *The quiz is closed book/notes. You have 10 minutes to complete it; use this paper only.*

Problem 1: Recall (2pts) (Answer in one sentence only.)

What is the Markov chain property?

Problem 2: Work (8 pts) (Show all derivations/work and explain.)

Consider a primitive clinic in a village. People in the village have a very nice property that they are either healthy or have a fever. They can only tell if they have a fever by asking a doctor in the clinic. The wise doctor makes a diagnosis of fever by asking patients how they feel. Villagers only answer that they feel normal or cold.

Suppose the initial probability of a patient in fever state is 0.4. The transition probability from healthy to healthy state is 0.7, and from fever to fever state is 0.6. In addition, the probability of a patient in healthy state feels normal is 0.6, and the probability of a patient in fever state feels normal is 0.1.

Now consider a patient comes to the clinic for two days in a row and the doctor discovers that on the first day he feels normal, on the second day he feels cold. What is the probability of observing this sequence?