**Exercise 1 – HH model**

Solve the HH equations numerically and show the following:

1. Existence of action potential. What are the dynamics of the variables during the action potential? (30p)

2. Existence of a current threshold under which action potential does not happen. What is the threshold approximately? (10p)

3. The system's response to a steady current greater than the threshold value. (10p)

4. Prove the existence of a refractory period. Can it be overcome? Show how. (10p)

5. What happens when the current is not steady but derives from a Poison distribution? (10p)

6. What is the relation between the input current and the firing rate in the HH model? (10p)

Presentation (20p)

\*Make sure your answers are logical and consistence (for example - If you found a threshold of X mA don’t present an action potential that was created using a current less than X).