Some useful notes:

Tutorial on how OpenAI Gym works:

https://gym.openai.com/docs/

List of Gym environments:

https://gym.openai.com/envs/#classic_control

TensorFlow tutorial:

https://www.tensorflow.org/guide/low_level_intro

{low level intro; tensors; variables; graphs and sessions; save and restore}

Github implementation of Deep Q Networks (Question 2a)

https://github.com/devsisters/DQN-tensorflow

Notes on exercise:

Question 1:

Two parts:

b) REINFORCE ALGO

c) Q learning with tabular representation.

Recommendation: Start with c) Q-learning. Is much easier and can be coded directly in python/numpy without needing to use TensorFlow.

Recommendation: Do both b) and c) from Question 1 as preparation for the exam, as well as for learning and doing something super cool. If this can be understood and coded then most of the concepts from the lecture have been understood. Also it is possible that content from these exercises are directly in the exam.

Note: b) REINFORCE algorithm, is a bit harder, it requires the use of TensorFlow (or PyTorch, if you want but I recommend TensorFlow). The tutorial links above describe the main concepts.

Question 2:

This question is an **EXTENTION**, and I do not expect people to be able to complete it.

If you are super into it, and want to push yourself have a go at this.

If someone does both a) and b) and gets it to work, I will be very impressed.

The solution for part a) can be found in a GitHub repository (link above) if you need assistance or to check how the results should look.

It may (no guarantees) be possible to us the GPUs of the RWTH CLAIX 2018 cluster to solve this task (Question 2). You definitely do not need this however for solving question 1.