COMP9444 Neural Networks and Deep Learning

## Quiz 7 (Reinforcement Learning)

This is an optional quiz to test your understanding of the material from Week 7.

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1. Explain the difference between the following paradigms, in terms of what is presented to the agent, and what the agent aims to do:
   - Supervised Learning
   - Unsupervised Learning
   - Reinforcment Learning

2. Describe the elements (sets and functions) that are needed to give a formal description of a reinforcement learning environment. What is the difference between a deterministic environment and a stochastic environment?

3. Name three different models of optimality in reinforcement learning, and give a formula for calculating each one.

4. What is the definition of:
   a. the optimal policy
   b. the value function
   c. the Q−function?

5. Assuming a stochastic environment, discount factor $\gamma$ and learning rate of $\eta$, write the equation for
   a. Temporal Difference learning TD(0)
   b. Q−Learning
   Remember to define any symbols you use.

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Make sure you try answering the Questions yourself, before checking the Sample Answers