

## 1995 Paper 8 Question 9

### Computational Neuroscience

Neural firing patterns are stochastic: the spike trains emitted by a single neurone contain intrinsic timing randomness resembling a Poisson process, and they create very different response patterns even for apparently identical inputs. Discuss the origins and possible rôles of the stochasticity, including some arguments about why 'noise' may not be a bad thing. Discuss how it might suggest new kinds of computational engine or search strategies. [20 marks]