Checkpoint 3: Partial differential equations: Marksheet

Name: **Matriculation number:**

1. Initial value problems: the Cahn-Hilliard equation (7 marks):

The explicit Euler algorithm has been coded up correctly and efficiently (2 marks)

Qualitatively correct behaviour for spinodal decomposition and droplet growth (3 marks)

A plot of the free energy versus time has the correct behaviour quantitatively (2 marks)

Comments:

2. Boundary value problems: Poisson's equation (11 marks):

Jacobi and Gauss-Seidel algorithms have been coded up correctly and efficiently (2 marks)

Correct results have been obtained for the qualitative and quantitative behaviour of a monopole charge or a Gaussian charge distribution, and appropriate graphs for the potential and electric fields have been plotted (3 marks)

Correct results obtained and appropriate plots shown for the magnetic field and vector potential for a straight wire (3 marks)

The successive over-relaxation method has been coded up correctly and a study of the optimal value of omega carried out with quantitatively the correct results (3 marks)

Comments:

3. Visualisation (appropriate for concentration, potential and field) (2 marks)

Comments: