1. Saddle-node bifurcations in 1D:
problems 3.1.1 through 3.1.4

2. Pitchfork bifurcations in 1D:
problems 3.4.1 through 3.4.4

3. Nonuniform flows on the circle:
problems 4.3.5, 4.3.6

4. Classification of fixed points for linear systems:
5.2.3 through 5.2.10

5. Fixed points and linearization for nonlinear system:
6.3.1, 6.3.2

6. Proving the existence of oscillations via the Poincare-Bendixson theorem:
7.3.3, 7.3.5

7. Hopf bifurcations:
8.2.2

8. Dissipative systems:
You should know how to prove that volumes contract if
the divergence of f is negative. As an example, also do
problem 9.2.6a.

9. Theory of fixed points of one-dimensional maps:
10.1.10, 10.1.12, 10.1.13 ("superstable" means that f'=0 at the fixed point)

10. Dimension of self-similar fractals:
11.3.1, 11.3.2, 11.3.8

11. Attractor reconstruction:
12.4.1.
I may also give you a computational problem about attractor reconstruction.
This problem would not be obligatory, but you would be allowed to do it in
place of one of the others. I do not guarantee that there will be such a problem
on the exam. Examples are 12.4.2, 12.4.3, 12.4.4.