This is a study guide for Test II. If you can do the indicated kinds of problems you should do all right on the test. That is not a guarantee that every problem will look like one of these!

2.4: Expect a linear equation with a nonconstant function of $t$ in it. Take a look at 4-7, 14-17 on p. 55.

3.1: I don’t feel inclined to ask about this section.

3.3: Definitely I like these. Anything in 1-10 is worth trying.

3.4: I like these. 1-12. You need to know how to set up the equation for each of the various kinds of components.

9.2: Be able to solve systems using the method of Laplace transforms. 7-12, 22-27 are appropriate. You could try 35-40, 49-56, but some of these might present additional difficulties (or they might not).

2.5/8.4/9.2: You should be able to set up and solve a mixing problem with one tank. You should be able to set up a system of equations for multiple tanks (solving it would be EC). 2.5 probs 1-6, swapping rates in 6 so it is possible; 8.4 25-27 setup only, 9.2 58-59 setup only.

2.9: problems 7-20. Be able to identify equilibria, sketch direction fields, sketch the different kinds of possible solution curves, identify stable and unstable equilibria.

2.7: I will definitely ask something like 17-20 (not necessarily with word problem setup: I may give you the differential equation). I might ask something like 9, 10 or 23.
2.6: 9-21 are fair game; later problems are not.