1. Consult the Study Guide for the Midterm Examinations for the topics covered prior to the midterm exam.

2. **Sections 5.7, 5.8**: Predictor-corrector methods, Richardson’s extrapolation.

3. **Section 5.9**:  
   *Problems: Set up the finite difference schemes for initial-value problems in Problem 2(a,b).*

4. **Section 5.10**: Consistency, convergence, (weak/strong) stability of a numerical method; characteristic polynomial, root condition.  
   *Problems: 4(a,c,d), 5,7,8.*

5. **Section 5.11**: Region of absolute stability, Implicit Trapezoidal method, Backward Euler method. *Problems: 7,8,9.*

6. **Sections 11.1, 11.2**: Boundary-value problems for second-order ODEs, Newton’s method for finding roots of nonlinear equation.

7. **Section 11.3**: Boundary-value problems for second-order ODEs, Newton’s method for finding roots of a nonlinear equation.  
   *Problems: Set up finite-difference schemes for boundary-value problems in Problems 1,2.*

8. **Section 12.1**: Laplace Equation, Poisson Equation.  
   *Problems: Set up finite-difference schemes for boundary-value problems in Problems 3 a,b.*

9. **Section 12.2**: Heat Equation, Forward-Difference method, Backward-Difference method  
   *Problems: Set up finite-difference schemes for initial boundary-value problems in Problem 1 a.*