1. Describe the sources of nonlinearities in solid continuum mechanics based on Tonti diagram and corresponding examples. (20 pts)

2. Describe the determination of critical points and how to classify into limit and bifurcation points analytically. (30 pts)

3. Describe the catalog of finite strain measures based on Seth-Hill family and corresponding conjugate stress measures including the recovery of the Cauchy (true) stress. (30 pts)

4. The solution advancing process requires strategic decisions to be taken at three levels: increment control, prediction, and correction. Describe various increment control strategies including geometrical representation and characteristics. (20 pts)