

## Questions on Stability and Bifurcations:

1. What is state variable?
2. What is parameter of a problem?
3. What is potential and what systems is it used for?
4. What is equilibrium? How is it found mathematically?
5. What are stable and unstable equilibria? How is stability of equilibrium determined mathematically?
6. What is equilibrium diagram?
7. What is bifurcation?
8. What is a bifurcation diagram?
9. What is the critical value of a parameter?
10. Define supercritical bifurcation. Sketch a typical bifurcation diagram, indicate stable and unstable branches.
11. Define subcritical bifurcation. Sketch a typical bifurcation diagram, indicate stable and unstable branches.
12. Define catastrophe. Sketch an example of an equilibrium diagram.
13. What is fold catastrophe (limit point instability)?
14. How do you understand the term “structurally stable”?
15. What is phase diagram (or phase plot, or phase portrait)?
16. What is cusp catastrophe?
17. How do you understand hysteresis?