* **Disadvantage of analog simulation v/s digital simulation:**

1. **Limited Accuracy:**

Result obtained by analog has limited accuracy so more accurate results digital simulation is used. Example: where high accuracy is required as in space vehicles, guided missiles & Fusion analog simulation not used.

1. **Magnitude scaling:**

In analog simulation values of variables are represented in voltages, which have fixed & limited range other wise result become inaccurate. It is very difficult task, when number of variables is large & range of their variation is not known. Where digital simulation the problem of magnitude scaling does not arise, as they have very large range with floating point arithmetic, they have very large precision. Hence no magnitude scaling required in digital simulation.

1. **Hardware set up required:**

In analog simulation hardware elements have to combined to simulate system, they have to be tested & calibrated. Where no such setup required in digital simulation. Switch one simulation to another take time where in digital simulation no time required. A simulated program on digital computer can be easily stored for reuse.

Finally analog simulation has two advantages over digital simulation one speed of solution & second immediate display result of simulation.

* **Numerical integration v/s continuous system simulation**

1. In simulation we always keep track of the state of system explicitly. The out come of each step of numerical calculation in simulation experiment can be interpreted directly as state of the system at some point in time. Simulation essentially consists of constructing history of a system – a succession of explicit state description at each instant as we move forward in time. In this way one to one correspondence between computers does & what take place in the system.

In numerical solution of equation no such correspondences is preserved. Usually pure computations short cuts taken, parameter are lumped & mathematical equation maintained before computer program is developed. These destroy one-to-one correspondences between computer steps and original system from which equation is derived. Consequently the output data have to interpret in light of earlier manipulation before conclusion can draw about system.

1. Secondly they’re in difference of attitude. In case of numerical calculation we only see the given sets of differentials equation as a mathematical objects & proceed to integrate them.

In simulation we look upon the equations as one of steps in the process. We know in real life system, we are aware of approximations in model that are being simulated.

Finally by looking with output data, which directly represent the system. We also prepared to modify the model if necessary.