Since we now have explored the possible causal assignment for each of the basic elements, it is appropriate to apply this information to entire system models in an orderly fashion. The traditional way to assign causality to a bond graph model is by using what is called the *Sequential Causality Assignment Procedure* (SCAP). This procedure is derived from a physical based motivation. That is, we seek a causal orientation of the bond graph that is consistent with a set of physical constraints imposed in a hierarchical fashion. The constraints are imposed in the following order:

- each source element S_e and S_f, must have its appropriate causal orientation
- each junction element *0*, *1*, *TF* and *GY* must have consistent orientation
- storage elements *C* and *I* should be oriented with integral causality to the maximum extent possible

The *Sequential Causality Assignment Procedure* is straight forward and orderly as given in the steps below.

1. Assign the required causality to all the sources S_e and S_f in the model

2. Extend the causal implications through the graph as far as possible using the constraint elements *0*, *1*, *TF* and *GY*.

3. Choose any storage element *C* or *I* and assign to it integral or preferred causality and repeat step 2.

4. Repeat step 3 until all storage elements have been assigned a causality. Certain storage elements may have been forced to take differential causality and certain bonds may not have any assigned causality.

5. Choose any unassigned *R* element, assign causality to it arbitrarily, and repeat step 2.

6. Repeat step 5 until all bonds have been assigned a causality.

In order that the causality assignment to a bond graph can be performed with ease and rapidity, it is required that the causality assignment to the constraint elements *0*, *1*, *TF* and *GY* is memorised. Practice is the key word. Therefore, let us consider two examples using the procedure.