

Important Rules and Definition in SGF

Transmittance: The path gain in SGF that replaces the transfer function of each block in the given block diagram.

Forward Path: The path traversed from input to output, following the direction of arrows with no node traversed more than once.

Feedback Path: The path traversed from output side to input side, following the direction of arrows with no node traversed more than once.

Loop: A traversing path terminating at the same node where started from.

Node: A junction of two or more paths. A node is either a summing junction (node 1, 2 and 6) or a common point as follows:

1. A common point of a forward path and a takeoff forward path (node 3).
2. A common point of a forward path and a takeoff feedback path (node 4 and 7).
3. A common point of two or more feedback paths (node 5).
4. Input node; where source is connected (node R)
5. Output node; where output is measured or taken (node C).

Rule 1: Use the definition of node to identify all possible nodes. Make sure that summing junctions, input point R and output point C is always considered as nodes. These are strong nodes.

Rule 2: Lay off all the possible nodes so that they occupy almost the same position as in the given block diagram. This is illustrated in Figure (1)

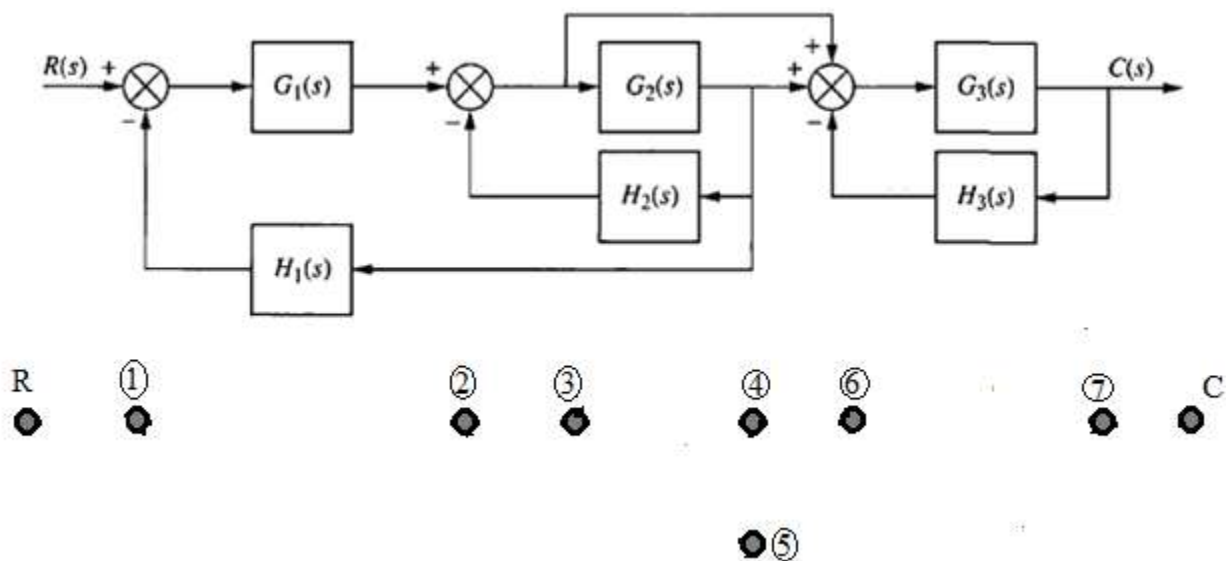


Figure 1

Rule 3: Interconnect all the nodes with lines (transmittances) that maps the given block diagram with forward and feedback paths designated by arrowheads. This is illustrated in Figure (2).

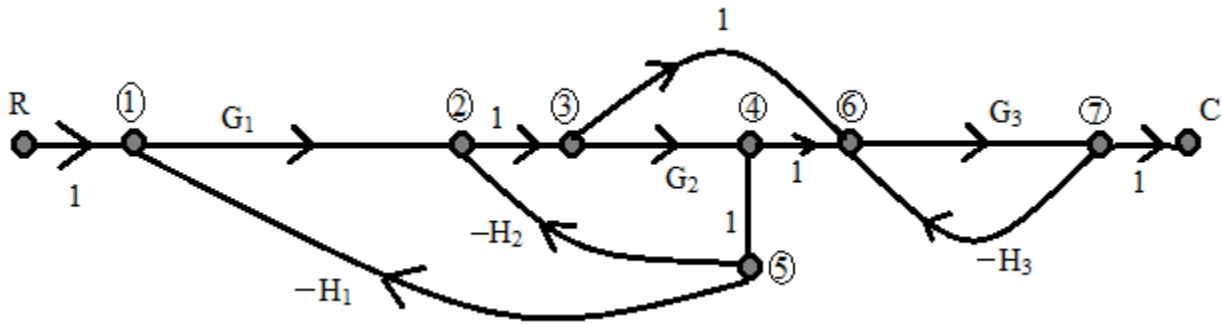


Figure 2

Rule 4: To simplify, nodes between which the transmittance is 1 can be absorbed, except:

- a. Two summing junctions.
- b. A summing junction and a node where feedback is incorporated.
- c. A summing junction and input node R.
- d. A summing junction and output node C.

Thus node 2 and 3 can be absorbed, and node 4 and 5 can be absorbed. In the same manner node 7 can be absorbed into node C (the designation of the resultant node will remain C). This is illustrated in Figure (3).

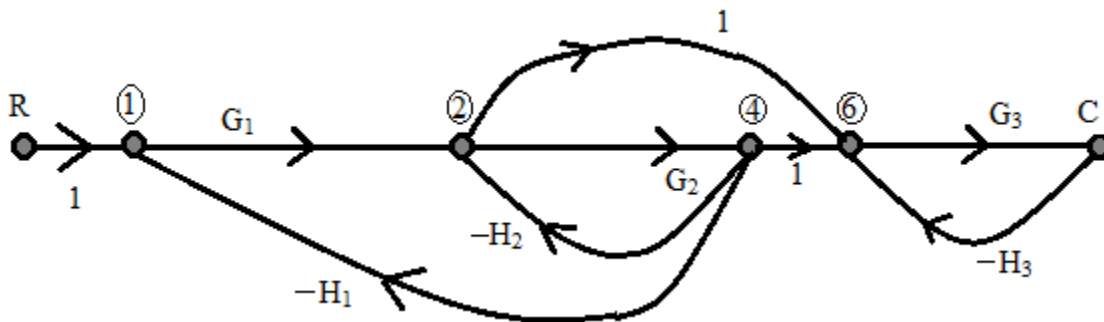


Figure 3