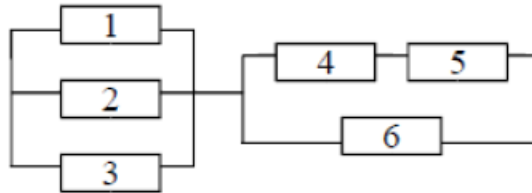1. Derive the systems structure function of the following block diagram.

   (a) directly,

   (b) by defining minimal cut sets and using minimal cut set representation,

   (c) by defining minimal path sets and using minimal path set representation.



2. An airplane has 4 engines. The reliability of a single engine is $R = 0.95$.

   (a) Compute the reliability of the airplane for a flight when the airplane needs at least 2 working engines to land.

   (b) Compute the reliability of the airplane for a flight when the airplane needs at least one working engines per wing to land.