# Construct the necessary truth tables, Boolean functions and Simulation file with the appropriate IC diagram comprising the basic logic gates that represent the following scenario:

Suppose in your bed room there are 2 electric light bulbs, 1 air cooler and 1 ceiling fan. Any of the bulbs can serve your purpose accordingly; however, the air cooler and ceiling fan can serve the same purpose, so there is no need to run both air cooler and ceiling fan at the same time. If you wish to prepare a microcontroller-based device that only allows to turn on one/both of the bulbs, **AND** either of the air cooler **OR** the fan together at a time. How are you supposed to build the underlying logic with a Boolean function? Construct the truth table according to your logic and draw the function from there.