Read the materials below in preparation for discussion in class. The questions are intended
to guide your reading and thoughts, but are not the only aspects that will be discussed in
class.


   (a) List the sequence of problems that form part of the optimization of airline opera-
tional plans.

   (b) Describe the flight scheduling problem. Be sure to clearly specify the decision
       variables.

   (c) Describe the fleet assignment problem.

   (d) Describe the aircraft rotation problem.

   (e) Describe the crew scheduling problem.

   (f) Describe the crew assignment problem.

   (g) The problems that form part of the optimization of airline operational plans are
typically solved sequentially. That is, one problem is solved first, and its output
forms part of the input of the next problem. However, often significantly better
overall plans could be obtained if all these problems could be solved simultane-
ously. (Usually the overall problem is intractable.) Explain why better solutions
can be obtained if these problems are solved simultaneously. Be very specific in
your explanation.

   (h) List the problems that form part of the optimization of airline recovery operations.

   (i) Describe the input of the model of airline operations in the paper.

   (j) Describe the state of the airline operations process.

   (k) Describe the events that result in a change of the state of the airline operations
process.

   (l) Describe the airline operational decisions. For each of these decisions, give an
example of a typical form that the decision takes. For example, if the decision
is the number of cans of Coca-Cola to put on the flight, the form of the decision
could be to choose a fixed percentage, based on historical usage data, such as
20%, and put a number of cans of Coca-Cola on the flight equal to 0.2 times the
number of passengers on the flight.
(m) Explain the operational performance measures discussed in the article.
(n) Propose operational performance measures not discussed in the article. Be very specific.
(o) Explain the 4 types of schedules evaluated with SimAir.
(p) Compare the performance of the 4 types of schedules evaluated with SimAir.