**ANNEXES**

**Proof 1:** Poisson distribution for modeling the number of plane accidents

We know that so we have

**Proof 2:** Determination of the bayesian estimator derived from a gamma prior

Model :

Prior :

* Joint distribution:
* Marginal distribution:

We notice that:

Hence, we have:

* Conditional distribution:

So .

**Proof 3:** Prior & posterior predictive distributions

* Prior predictive:

Thus,

* Posterior predictive:

Then,