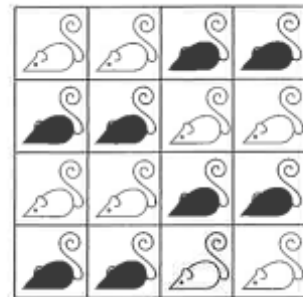***Please do not write on this exam paper and do not forget to give it back at the end of the test***

Subject 25 – LOGIC

Ex1

A biologist has a set of cages in a 4 x 4 array.
He wants to put one mouse (black or white) into each cage in such
a way that each mouse has at least one neighbour of each colour
(neighbouring cages share a common wall).
The black mice are more expensive,
so he wants to use as few of them as possible.
What is the smallest number of black mice that he needs?

Ex2

In 3013, King Warren of Australia is finally deposed. The five remaining earls argue about which
one of them will be king, and which one of the others will be treasurer.
Akaroa will be satisfied only if Darlinghurst or Erina is treasurer.
Bairnsdale will be satisfied only if Claremont is treasurer.
Claremont will be satisfied only if Darlinghurst is either king or treasurer.
Darlinghurst will be satisfied only if Akaroa is either king or treasurer.
Erina will be satisfied only if Akaroa is not king.
It is not possible for all five to be satisfied, so in the end they appoint king and treasurer so that the
other three earls are satisfied. Who becomes king?

Voc : earl = comte (titre de noblesse)