

Subject 24
Probability

Please do not write on the exam paper.

Pregnant women are subjected to various tests to detect any disease or birth defect their foetus may have.

Such a test is the "serum marker test". It measures the risk for the baby to suffer from Down syndrome. It is a statistical test, which is called a screening.

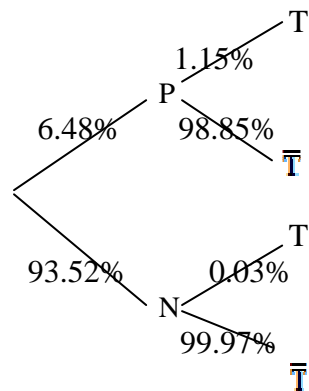
But it is not a diagnosis: a positive result means that there is a higher than normal risk to give birth to a baby suffering from Down syndrome, whereas a negative result means that the risk is normal.

Over the years 1997 and 1998, an extensive study was carried out in France: the results (concerning only single pregnancies among women who were younger than 38) are given on the following tree diagram:

P means positive result.

N means negative result.

T means that the baby ultimately suffers from Down syndrome



Nota: Down syndrome: trisomie 21

serum marker test: test des marqueurs sériques

1. Which percentage of the babies suffers from Down syndrome?
2. What is the probability that the test has correctly predicted the outcome of the pregnancy?
3. What is the probability of having a baby not suffering from Down syndrome, given that the result to the test is positive?
4. What is the probability of having a baby suffering from Down syndrome, given that the result to the test is negative?
5. Is a positive or negative result an absolute indication that something is or is not wrong with the baby?