Question 1:

On an airport all passengers are checked carefully. Let T with t ε {0, 1} be the random variable indicating whether somebody is a terrorist (t = 1) or not (t = 0) and A with a ε {0, 1} be the variable indicating arrest. A terrorist shall be arrested with probability $P(A = 1|T = 1) = 0.98$, a non-terrorist with probability $P(A = 1|T = 0) = 0.001$. One in hundred thousand passengers is a terrorist, $P(T = 1) = 0.00001$. What is the probability that an arrested person actually is a terrorist?

Question 2:

In an oral exam you have to solve exactly one problem, which might be one of three types, A, B, or C, which will come up with probabilities 30%, 20%, and 50%, respectively. During your preparation you have solved 9 of 10 problems of type A, 2 of 10 problems of type B, and 6 of 10 problems of type C.

a)   What is the probability that you will solve the problem of the exam?

b)   Given you have solved the problem, what is the probability that it was of type A

Note : The answers should be handwritten and soft copy to be uploaded in Vtop