Hypergeometric distribution

Poisson distribution

Problem #1. A group of 10 individuals are used for a biological case study. The group contains
3 people with blood type O,
4 with blood type A, and
3 with blood type B.

What is the probability that a random sample
of 5 will contain
1 person with blood type O,
2 people with blood type A, and
2 people with blood type B?

Problem #2. A manufacturer of automobile tires reports that among a shipment of 5000
sent to a local distributor,
1000 are slightly blemished.

If one purchases 10 of these tires at random
from the distributor, what is the probability that exactly 3 are blemished?

Problem #3. In a certain industrial facility accidents occur infrequently. It is known that
the probability of an accident on any given day is 0.005 and accidents are independent of
each other.

(a) What is the probability that in any given period of 400 days there will be an accident
on one day?

(b) What is the probability that there are at most three days with an accident?