Question 3.

You are given a test with 10 multiple choice questions & each question has 5 possible answers. If you cannot answer any of these questions, what is the chance you get an A, i.e. answer 9 questions correctly?

Soln:

Let p be probability of answering each question correctly, so that $p = \frac{1}{5} = 0.2$.

Then, probability of answering incorrectly is $(1-p) = 1 - 0.2 = 0.8$.

Also, let X be # of correct answers. Then X is binomial distribution & we know the pdf of binomial R.V. X is

$$\begin{aligned} \mathbb{P}(X=9) &= \binom{n}{x} p^x (1-p)^{n-x} \\ &= \binom{10}{9} (0.2)^9 (0.8)^{10-9} \\ &= 0.000041. \end{aligned}$$