**Problem​ ​Statement**

A test is conducted which is consisting of 20 MCQs (multiple choices questions) with

every MCQ having its four options out of which only one is correct. Determine the

probability that a person undertaking that test has answered exactly 5 questions wrong.

**Solution:**

n = 20, n - k = 5, k = 20 - 5 = 15

the probability of success = probability of giving a right answer = s = ¼

the probability of failure = probability of giving a wrong answer = 1 - s

= 1 – ¼ = ¾

When we substitute these values in the formula for Binomial distribution we get,

P (exactly 5 out of 20 answers incorrect) = C (20, 5) \* (¼)^15\* (¾)^5

P (5 out of 20) = (20∗19∗18∗17∗16)/(5∗4∗3∗2∗1) \*  (¼)^15\* (¾)^5

= 0.0000034

Thus the required probability is 0.0000034 approximately.