17. 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:**

Here, n = 20, n - k = 5, k = 20 - 5 = 15

Here the probability of success = probability of giving a right answer = s = 1/4

Hence, the probability of failure = probability of giving a wrong answer = 1 - s = 1 – ¼ = 3/4

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

So, P (exactly 5 out of 20 answers incorrect) = C (20, 5) \* (1/4) 15 \* (3/4)5

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

= 0.0000034 (approximately)