IIT Madras
ONLINE DEGREE

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The probability that a student who registered for the IITM online degree programme will qualify the exam is 0.4. Find the probability that out of 10 students no one will qualify the exam. So, here the probability that this student will qualify the exam is 0.4. Now, what we have to find out that out of 10 students no one will qualify the exam.

Let us say X be the random variable that the student will qualify the exam. So, number of student that qualify the exam. So, in that scenario X can take value 0, 1, 2, 3, till 10 this means no student will qualify the exam, 1 student will qualify the exam, all student have qualified the exam. So, our question is no one will qualify the exam. So, is it a particular student that student either will qualify the exam or not qualify the exam. Assume that there will not be any case that the student is in between like qualified or not qualified.

So, basically what we have to find out is, here probability that X is taking value 0. So, what we have n here? 10, so $^{10}C_0$, probability of success that means he or she will qualify the exam is 0.4^r that is here itself 0 and probability of that he or she will not qualify the exam here is $(n - r)$ that

is $(10-0)$ which is nothing but $^{10}C_0$ is 1 itself 0.40 is 1 into 0.6^{10} that is nothing but 0.6^{10}. So, this will be our answer that the out of 10 students no one will qualify the exam.