MATH10282: INTRODUCTION TO STATISTICS
SEMESTER 2
QUIZ PROBLEM 9
(Deadline: Tuesday 28 April 2020, 9:00am)

The proportion p of defective items in a large population is unknown. We wish to test $H_0 : p = 0.2$ versus $H_1 : p \neq 0.2$. Suppose a random sample of 20 items is drawn from the population. Let Y be the number of defective items in the sample. Consider the test which rejects H_0 if and only if $Y \geq 7$ or $Y \leq 1$. Derive an expression for the probability of type II error.

This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, and the derivation is correct and detailed enough; 0.5 mark if the answer is correct, and the derivation is incorrect or not detailed enough; 0.5 mark if the answer is incorrect or not given, but the derivation is correct and detailed enough; 0 mark if the answer is correct, but the derivation is not detailed enough; 0 mark if the answer is incorrect, and the derivation is not detailed enough.

Please email your submission directly to me, mbbsssn2@manchester.ac.uk I will mark your solutions and email your mark and your scanned working to you within 24 hours of the deadline. PLEASE DO NOT FORGET TO WRITE YOUR FULL NAME AND ID.