MATH10282: INTRODUCTION TO STATISTICS

SEMESTER 2

QUIZ PROBLEM 3

(Deadline: Thursday 4 March 2021, 10:00am)

Suppose that $X_1, \ldots, X_n$ is a random sample from a binomial distribution with parameters m and p, where $m > n$. The probability given by

$$\Pr\left(X_1 = 1, X_2 = 2, \ldots, X_n = n\right)$$

can be simplified to

a) $\left[\prod_{i=1}^{n} \binom{m}{i}\right] \left(\frac{p}{1-p}\right)^{\frac{n(n+1)}{2}} (1-p)^m.$

b) $\left[\prod_{i=1}^{n} \binom{m}{i}\right] \left(\frac{p}{1-p}\right)^{\frac{n(n+1)}{2}} (1-p)^n.$

c) $\binom{m}{n} \left(\frac{p}{1-p}\right)^{\frac{n(n+1)}{2}} (1-p)^{mn}.$

d) $\left[\prod_{i=1}^{n} \binom{m}{i}\right] \left(\frac{p}{1-p}\right)^{\frac{n(n+1)}{2}} (1-p)^{mn}.$

This problem is worth 1 mark. Marking scheme: 1 mark if the answer is correct, 0 mark if the answer is incorrect.

Please use Blackboard to enter your answer.