

**MATH20802: STATISTICAL METHODS**  
**SEMESTER 2**  
**QUIZZ PROBLEM 5**  
**(Deadline: Wednesday 14 March 2018, 12:00noon)**

Suppose  $X_1, X_2, \dots, X_n$  is a random sample from a distribution specified by the probability mass function

$$p(x) = \frac{(\lambda x)^{x-1} \exp(-\lambda x)}{x!}$$

for  $x = 1, 2, \dots$  and  $0 < \lambda < 1$  is an unknown parameter. Find the maximum likelihood estimator of  $\lambda$ .

**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.**

**You can give your written solution to me during any of the lectures or example classes. You can also bring your solution to ATB2.223, place it under the door if I am not in. Email submissions or late submissions will not be accepted. I will mark your solutions and email your mark to you within 24 hours of the deadline. PLEASE DO NOT FORGET TO WRITE YOUR FULL NAME AND ID.**