



Al5030: PROBABILITY AND STOCHASTIC PROCESSES

Quiz 6

DATE: 18 NOVEMBER 2024

Question	1	2	Total
Marks Scored			

Instructions:

- Fill in your name and roll number on each of the pages.
- You may use any result covered in class directly without proving it.
- Unless explicitly stated in the question, DO NOT use any result from the homework without proof.

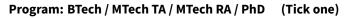
Fix a probability space $(\Omega, \mathscr{F}, \mathbb{P})$.

Assume that all random variables appearing in the questions below are defined with respect to \mathscr{F} .

1. (2 Marks)

Let $U \sim \mathsf{Unif}(0,2)$. Compute $\mathbb{E}[U|\{U>1\}]$.

Name: Roll Number: Department:





2. (3 Marks)

Let \boldsymbol{X} and \boldsymbol{Y} have the joint PDF

$$f_{X,Y}(x,y) = \begin{cases} 3y, & -1 \leq x \leq 1, \ 0 \leq y \leq |x|, \\ 0, & \text{otherwise}. \end{cases}$$

Determine $\mathbb{E}[X|Y]$ and $\mathbb{E}[X^2|Y]$.