Name:
Roll Number:
Department:
Program: BTech / MTech TA / MTech RA / PhD (Tick one)

भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

AI5030: Probability and Stochastic Processes

Quiz 2

Date: 28 August 2024

Question	1(a)	1(b)	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.**

1. A box contains one coupon labelled 1, two coupons labelled 2, and so on up to ten coupons labelled 10. Two coupons are drawn simultaneously and uniformly at random from the box.

   (a) **(2 Marks)**
   Specify Ω and $\mathbb{P}$ for the experiment, assuming that $\mathscr{F} = 2^{\Omega}$.

   (b) **(2 Marks)**
   Find the probability of the event that the two coupons carry the same number.

Name:
Roll Number:
Department:
Program: BTech / MTech TA / MTech RA / PhD (Tick one)

2. **(1 Mark)**

   Consider the collection

$$\mathscr{D} = \Big\{(-\infty, x] : x \in \mathbb{R}\Big\}.$$

   Express the open interval $(2, 3)$ via countable unions, complements, and/or countable intersections of sets in $\mathscr{D}$.