

BM5063 Systems Medicine

Problem Set 2

Instructions

1. You are not expected to submit answers to these problems

Questions

1. Using the **Python** code for Glucose-Insulin-Beta cells model discussed in the class analyze the following
 - (a) Onset of prediabetes where blood glucose levels reach a higher value due to a saturation in Beta-cells mass. Identify which factors can cause prediabetes.
 - (b) Consider a drop in insulin sensitivity under two conditions- (i) sudden drop, and (ii) gradual drop. Which one is more likely to result in prediabetes?
 - (c) Consider two scenarios- (i) a small drop in insulin sensitivity over a long duration, and (ii) a large drop in insulin sensitivity over a small duration. Which is more likely to cause T2 diabetes?
 - (d) Analyze the role of food intake on the onset of diabetes.

