Q6 Solution

1. **Variables**: Define

   $$x_i$$

   for each potential location

   $$i$$

   as described above.

2. **Objective Function**: Maximize the total coverage score minus the total environmental impact score:

   $$Z = \sum_{i=1}^{n} (C_i \cdot x_i) - \sum_{i=1}^{n} (E_i \cdot x_i)$$

3. **Constraints**:

   - Budget constraint:

     $$\sum_{i=1}^{n} x_i \leq M$$

   - Binary variables:

     $$x_i \in \{0, 1\}$$

     for all

     $$i$$

     .