Assignment 8

The six regions of a country are connected by roads. Ascertain the number of ways in which the roads can be constructed.

1. Given a graph shown in the figure. According to the principle of repeated replacement, which of the following is correct?

   - Option A: The number of ways to construct the roads is greater than the number of ways to construct the graph.
   - Option B: The number of ways to construct the roads is less than the number of ways to construct the graph.
   - Option C: The number of ways to construct the roads is equal to the number of ways to construct the graph.

2. In the graph shown in the figure, which of the following statements is INCORRECT?

   - Option A: The graph is connected.
   - Option B: The graph is planar.
   - Option C: The graph is a complete graph.

3. What is the minimum number of edges in a network in which each node is connected to every other node?

4. What is the maximum number of edges in a network in which each node is connected to every other node?

5. In the given graph, what is the maximum number of edges that can be added without creating any cycles?

6. In the given graph, what is the maximum number of edges that can be removed without disconnecting any nodes?

7. In the given graph, what is the minimum number of edges that need to be added to make the graph a complete graph?

8. In the given graph, what is the maximum number of edges that can be removed to disconnect the network into two parts?

9. In the given graph, what is the maximum number of edges that can be removed to disconnect the network into three parts?

10. In the given graph, what is the maximum number of edges that can be removed to disconnect the network into four parts?

11. In the given graph, what is the maximum number of edges that can be removed to disconnect the network into five parts?

12. In the given graph, what is the maximum number of edges that can be removed to disconnect the network into six parts?