1. Suppose the set S_n contains all the bit strings of length i, where i = 0, 1, 2,..., n. Again let $P_i = S_i - S_{i-1}$, i = 1, 2, 3, ..., n. Then show that the sets P_i , i = 1, 2, ... , n form the partition of the set S_n .

2. Prove that K_5 is non-planar graph.

3. How many reflexive relations are possible on a set A with n elements?

4. Suppose a person takes minimum one egg in every day. If he took 50 eggs in a month, then show that he took exactly 9 eggs in consecutive days.