

**EXAM FOR TOPOLOGY**  
**WINTER SEMESTER 2023/2024**

QUESTIONS SET NO. 2

1. Give a definition of a metric space. Provide examples. What are relation(s) between the notions of a metric space and a topological space?
2. Do there exist two topological spaces, and a continuous map between them, such that:
  - a) the image of any open set is closed?
  - b) the image of any closed set is open?
  - c) the conditions a) and b) are satisfied simultaneously?