7. From Dixmier, problem 1 p. 129.

8. Problem 2 p. 129 of Dixmier.

9. On a set of three elements, the coarse topology has two elements (open sets), and the discrete topology has eight elements. Give examples of topologies on $\{x, \, y, \, z\}$ having exactly a) three, b) four, and c) six elements.

10. On the same set of three elements, give an example of a collection of sets which satisfies axiom (i), and yet which is not a topology.