1. Name your favourite sub-area in ubiquitous computing. (1 pt)

2. **Scope, Applications, and Issues** (33 pts.)
   
   (a) Give three features of a ubiquitous computing environment that you do not find in a traditional computing environment. (6pts.)
   
   (b) Motivate the features in (a) by describing two classes of applications enabled by each feature and giving a concrete example of each class. (15pts.)
   
   (c) Give two new research issues raised by each of the features in (a). (12pts)

3. **Merging** (33 pts.)
   
   (a) Explain the problem of merging replicas. (5 pts.)
   
   (b) Give two conflicting requirements an ideal merging infrastructure should satisfy. Explain why they are conflicting. (11 pts.)
   
   (c) Describe three different approaches (e.g. Coda, Bayou, Sync) for addressing these requirements, and compare them based on how well they satisfy the requirements. (17 pts.)

4. **Service Discovery** (33 pts.)
   
   (a) Explain the service discovery problem, identifying why traditional schemes such as DNS do not solve this problem. (7 pts.)
   
   (b) Distinguish between push and pull based service discovery, explaining why systems such as UPnP support both. (8 pts.)
   
   (c) Berkeley’s SDS and MIT’s INS both create multiple name servers to support service discovery. Describe and compare the interaction among the name servers in the two approaches. (18 pts.)