Question 1
Consider the context of your course's project. For the development of the mobile application, discuss the advantages/disadvantages of the following development models: native apps, web applications.

Question 2
Discuss the following sentence: "Progressive web apps are a way to put into practice the idea of the offline-first movement", explaining why you agree / do not agree with the sentence and which functionalities are key to make offline-first possible.

Question 3
Consider Mobile Backend as a Service platforms. Why are notification services an important service in these platforms? In your reply discuss the problems of achieving the same goals in a system that does not support notifications.

Question 4
Pre-fetching is a key functionality for supporting mobile applications. Explain what is pre-fetching and alternatives approach for pre-fetching.

Question 5
Consider your are developing an application to support factory site inspections. In this application, the inspectors - usually working in groups of 3 to 5 persons - will have access to the information about the factory, that includes a list of machines to check. For each machine, there are several elements that need to be checked and some information may need to be recorded - e.g. a conveyor belt can be in good state or bad state, and if it is in bad state some additional information needs to be recorded.

  a) Discuss whether using CRDTs to model data is a good option or a simpler "last-writer wins" conflict resolution approach would be more appropriate.

  b) Independently of the previous reply, discuss how you could model the data using a database supporting CRDTs. Consider you have the following CRDTs available: LWW register; add-wins set; remove-wins set; update-wins map; remove-wins map; and that you can enclose a CRDT inside another, i.e., you can, for example, put a set inside as the value associated with a key of a map.

Question 6
Identify management is a crucial aspect in large scale IoT applications. Explain why.

Question 7
Explain what is edge computing and why IoT applications are a key driver in the emergence of edge computing and the type of computations that are performed at edge nodes.

Question 8
Time-series databases are becoming popular for supporting IoT applications. Explain why and the key features that differentiate a time-series database from more "traditional" SQL and NoSQL database (or even databases like Firebase Realtime).