Q1.1  
The application of a systematic, disciplined, quantifiable approach to the development, maintenance and operation of software; the application of engineering to software.

1.2  
Scenario-Based Model: The ANCCC has identified a large risk of having too many drivers on the road. They have come together and decided that strict restrictions must be put into place. They will do this by forcing residents to share cars. It is our job to develop a computerized system to assist them with their new risk-adjusted restrictions. This computerized system has detailed requirements that It must do (use cases such as login, requesting cars for use) and has clearly defined actors who will be using the system (car owners, resedients, council). The use of Use cases and activity diagrams will allow a better visualization of what is required, which is why this model should be used.

Q2.1  
Waterfall model  
  
2.2  
The robustness of the system, and how everything must work, and work well. You cannot have someone double booking a car, or a car request not going through, as they can get into huge trouble by being late to work by not having transport. The system does not require.  
The requirements of the system are well understood and have been laid out by the ANCCC, which suite this model well.  
  
MODEL DRAWN:  
Communication->Planning->Modelling->Construction->Deployment  
and then dotted lines going from deployment to everything else.  
  
Communication: This is the stage where we talk with the ANCCC for what they want developed. They have already discussed and come up with a computerized system to assist with their new risk-adjusted restrictions, that they want done.  
Planning: This is the stage where we take in the requirements from the ANCCC, and decide on how we are going to go about developing the system. This includes what language will be used, what is needed to be done, the hardware required to run the system ect.  
  
Modelling: This is where we do visual models such as Use Cases, Activity diagrams ect, so as to get a better idea on what we are doing. (Not sure if this is right)  
Construction: This is where we will actually code the software, so that it will have some type of registration and login functionality, car booking, scheduling and allocation functionality, and some type of approval activation and deactivation functionality.  
Deployement: It is at this stage where we can show the ANCCC our finished product. This is where they can decide if we have produced the correct computerized system to suite their needs, or if there are any issues. IF there are any issues, from here we can go back to any of the previous steps, to redo them and their following steps. Else, the product is deployed

2.4  
The Robustness of the system is paramount for Aspen Autos as they cannot have anything going wrong in the booking process of the cars. Both from the viewpoint of how expensive cars are (cannot get lost) and how if something goes wrong with a booking and a person cant go to work, they can get into trouble. The robustness in how the system is developed using this model will ensure that none of this happens.  
  
2.5

The requirements of the system has to be very clear, and understood well. If this is not done, at the deployment stage, you may have to go back to previous steps and redo a lot of functionality, wasting resources and time. As ANCCC is a council, members on their council may have different thought processes on how the end product should look, and when the deployment stage occurs, steps may have to be redone to suite their need/changing in their minds.

3.1  
There are too many drivers on the roads, resulting in flattened curbs and a danger to walking residents. Aspen Autos has imposed new restrictions, needing people to share cars, instead of them owning them individually. At this point it is very difficult for individuals to communicate with eachother to arrange sharing of the cars – such as when to share, where they can find them ect. In addition, as this is a forced process (you are forced to share your car), without any system in place, no such forced sharing can occur.

3.2  
Many of the individuals are working from home, and do not need their cars for most of the week. The proposed solution will have 3 views: The council, car owner, and car requester. The Car Owners will need to register their vehicles and their driving schedule (when they need the car). Car Requesters will be able to request the days/times they will need a car. The council will be in charge of adding users to the system, and approving longer requests/requests that re-occur each week.

3.3

For the system, their will be 3 main actors: the Council, Car owners and car requesters. For the system to work, there must be enough car owners who do not need their cars for most of the week, to supply the car requesters with vehicles. The Car Owners will need to register their vehicles and their driving schedule (when they need the car). Car Requesters will be able to request the days/times they will need a car. The council will be in charge of adding users to the system, and approving longer requests/requests that re-occur each week.  
In conclusion, this solution is feasible, as most of these individuals are working from home and are not using their cars most of the week, so others can use them in the mean time. It will reduce the number of cars needing to be bought/on the roads.

4.1  
The booking system needs to be able to book cars for any time of the day or night. As some people might work earlier than others (doctors, teachers, construction workers ect). This can be applied by the car owner leaving the vehicle in a safe/accessible location, and having they car keys either gotten in advance, or some type of secure PO box that holds spare keys. The system must be able to measure who has the keys/spare keys last.?????? (Needs something added here)

4.2  
-The resident must be able to request a car. They will need to specify for what purpose and for hoe long it will be needed.  
-Once a Car is allocated to a requester, the system must notify the requester of when and where it must be picked up, and when it must be back by.  
-If a resident needs a vehicle for a longer period of time, or periodically at X time each week on X day, they can put in a request for such. The council will the review this request, and can either approve or deny it.  
-A car owner must be able to register their vehicle, specifying how many it fits, when it will be available for others to use. They should also be able to activate or deactivate the car at any time.  
-The council will be in charge of adding users to the system. This will be done by sending a user a registration link, which they can fill out their name, surname, address, password, email and documents such as ID.