**Part 1**

**1 A**

UML stands for unified modelling language and is an OMG standard. It describes the class structure and attributes of classes within a program. It is not a coding language, however the developer can use it to implement the class structure contained within it when they write their code. Behavioural diagrams describe the functionality of a program.

**1 B**

Class – represents the static structure of the program. Structural.

Use-case – Represents the dynamic aspects of the system. Behavioural.

Interaction – Represents how different objects interact with each other. Behavioural.

Object – Represents the instance of a class within the program. Structural.

Sequence – Represents the interaction between objects in sequential order. Behavioural.

Activity – Represents the flow of the program based upon activities performed. Behavioural.

State – Represents the state that different elements within the program can be in. Behavioural.

**Part 2**

**2 A**

1 Planning and requirements phase – The customer describes what they want to be made to the development team and a feasibility study is conducted based on time, people, and budget.

2 System analysis phase – The software analyst determines the technologies to be used for the application and produces a software requirements document (SRS).

3 Design phase – The SRS is given to the designer and they produce a design document specification which is given to the developer.

4 Development/Implementation phase – The application is produced in accordance with the DDS.

5 Testing phase – The testing team test the produced application to ensure it adheres to the SRS and reports their findings back to the development team.

6 Deployment phase – The software is deployed to the customer and they give feedback to the development team.

7 Maintenance phase – The development team make any necessary changes to the application based on customer feedback and push out updates to the application.

Plan driven methodologies such as Waterfall complete the above stages in sequential order. One part must finish before the next part can start. If the finished product is not upto specification, then the whole process might have to be repeated from the start which costs extra time and money. Iterative methodologies break the project up into small chunks and produce one bit of the application at the time before handing them to the customer for feedback before the team start production of a different element of the program. The customer gives the team continuous feedback throughout the course of development, and the development team can make changes to the application during the development lifecycle.

**2 B**

It is important to follow a staged approach to software development to ensure that the project is well planned and designed and that each team member has all the necessary documentation and resources needed for their stage of development. This minimizes risk for the project.

**2 C**

Customer/Client – Describes what they want developed to the team and gives feedback to them afterwards.

System architect – Decides on what technologies to use based on the customer description and produces the SRS document.

Designer – Designs the application based on the SRS including the backend database and user interface design. Produces a DDS document for the developer.

Developer/Coder – Develops the application based on the DDS.

Software Tester – Tests the application based on the SRS and reports their findings back to the developer.

Project manager – Manages the team and resources – time, budget, people, and prioritization.

**2 D**

The agile methodology would be suitable for the project because:

* It prioritizes customer satisfaction and the customer is heavily engaged with the ongoing development process and continuously provides feedback.
* Due to the iterative approach of agile, the customer will have a basic working version of the application in their hands very quickly. This can then be added to and improved by the development team as development continues.
* The application will evolve over time once the customer has an initial working version in their hands and has given their feedback to the development team.
* An agile board is used which includes a product backlog and user stories. These are moved across the board as they are implemented within the application.

**2 E**

Scrum is a project management methodology which can be used as part of the agile development methodology. Scrum breaks the project down into 2 week sprints. After the two weeks is up, the team delivers what they have produced as part of that sprint to the customer, and a team meeting is held to debrief the sprint. A 15 minute team meeting is held every morning to discuss the plan for that day for each team member. A scrum master is a member of the development team who sets up team meetings and removes any obstacles faced by the team so that development can continue.

**Part 3**

**3 A**

The SRS document puts the customer’s description of what the software should do and puts it on paper in normal language. This document is used by the designer so they can design the application, and it is also used by the tester so they can test that the finished application does what it should do.

**3 B**

The software design document is produced by the designer and is used by the developer so that they can produce the application based upon the design contained within it. It is a blueprint for the development team which describes what the program is and how about the program that needs to be created.