**Section 1**

1. **Using a script/command line tool/website to fetch the SSL certificate details of the website https://www.ultimateqa.com and identify when the certificate expires. Outline how you decided to go about this, and how you might automate this procedure so it would not need to be run manually. This can be as simple or more complicated as you like.**

* I would use OpenSSL (openssl x509 -text -noout -in securitytrails.crt). This will show the SSL certificate details, including common name, issuer, and expiration dates. I would use Curl to extract data from any SSL certificates. curl -vvI https://securitytrails.com

**Section 2**

1. **How could you reduce the time to execute some or all these test cases or if you had several sites to test?**

* Firstly, I would consider doing Parallel testing and conduct research on which technology is recommended for Parallel testing. In this case I would use these technologies selenium grid, sauce labs, and browser stack. In my situation since I don’t have a budget, I would use selenium because it’s an open source.
* Prioritize and categorized the tests based on their importance then evaluate which tests are more critical; after evaluating I would run critical tests more frequently and defer less critical ones.
* Implement the CI/CD pipeline within our test automation to automate the test execution and give a clear test report.
* I would also implement Test optimization by reviewing and refactor tests. Also remove redundant tests or code and ensure tests are independent and can run in isolation to avoid dependencies that slow down execution.
* Within the pipeline I would create regression suite, and smoke tests make sure to tag relevant and critical tests.

1. **Briefly (a few sentences is fine) describe how you would set up a pipeline on your preferred source control management platform to perform continuous integration testing of a simple front end web-based application. It could be anything you like eg a calculator that outputs the correct results from numbers you input.**

* Firstly, I would create a GitHub Account
* Set up a Repository and push my code changes to it.
* In the Repository I would also create a GitHub workflow directory and add a Yml pipeline.
* Set Up a workflow definition this includes environment set up. This type of process each time some changes are pushed in the repository or pull request created. The Continuous Integration Pipeline will automatically execute tests to verify the code changes made.

1. **Describe briefly how you would run performance testing against a web-based application**.

* Create a detailed Test Plan that stimulates user behaviour on the application.
* Define testing goals, start with clarity and purpose. Define primary objectives of this performance and set targets, prioritize the most critical aspects of the application.
* Select the appropriate performance testing tool for example Jmeter.
* Jmeter allows you to add a test plan on the Graphical user Interface
* Can Add thread group, add http Requests, Run the tests and review the results.

1. **Describe briefly what kind of security testing you might perform against a web-based application.**
   * I would perform vulnerability scanning to check vulnerabilities within the application SQL injections, insecure configurations and cross site scripting. Another type of tests to perform is data protection testing to ensure data integrity and data is properly encrypted.
   * During code reviews I would also verify the security flaws for example improper input validation and insecure coding practices.
2. **Describe how you might build in exception and error handling to your application.**

* I would make sure I understand that can occur for example syntax errors, logical errors, and runtime errors.
* Try to implement Try Except Blocks, wrap the code that has a possibility of throwing exceptions within the Try Except Block.
* Logging errors and used friendly messages that provide guidance on how to proceed after an exception.