A4Q
Selenium 4
Tester Foundation

A4Q Certified Selenium 4 Tester Foundation

MOCK EXAM
Questions with Answers

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Sample Questions with Answers

STF1-1 (K2) Explain the objectives, advantages, disadvantages, and limitations of test automation

1. What is the primary objective of implementing test automation in software testing?

A) To reduce the cost of manual testing

B) To increase the speed and efficiency of testing

C) To eliminate the need for human testers entirely

D) To replace the test development phase

Answer: B) To increase the speed and efficiency of testing (As per section 1.1 in the syllabus)

STF1-2 (K2) Understand the relation between manual and automated tests

2. How do manual and automated testing complement each other in a software testing strategy?

A) Automated testing can completely replace manual testing for all types of tests

B) Manual testing is used only for functional testing, while automated testing is used only for non-functional testing

C) Automated testing is ideal for repetitive tasks, while manual testing is better for exploratory and ad-hoc testing

D) Manual and automated testing cannot be used together in the same project

Answer: C) Automated testing is ideal for repetitive tasks, while manual testing is better for exploratory and ad-hoc testing (As per section 1.2 in the syllabus)

Explanation:

Automated testing is well-suited for repetitive, regression, and large-scale tests. Manual testing is more effective for tasks requiring human intuition, such as exploratory, usability, and ad-hoc testing. Both approaches are often used together in a comprehensive testing strategy. Automated testing does not completely replace manual testing (A), and both types of testing can be applied across various test levels (B), not just specific types.

STF1-3 (K1) Identify technical success factors of a test automation project

3. Which of the following is a key technical success factor for a test automation project?

A) Ensure that the testing environment is stable and consistent

B) Prioritise manual testing on the project as test automation may be unreliable

C) Prioritise increasing the automated test coverage over automation test maintenance

D) Automatically log the defect on the test management tool through the test automation solution

Answer: A) Ensuring the testing environment is stable and consistent. (As per section 1.3 in the syllabus)

Explanation:

A stable and consistent testing environment is crucial for the success of a test automation project, as it ensures that tests run reliably and produce accurate results. Test maintenance is more important than increasing test coverage otherwise there will be many unreliable test cases. Ignoring test maintenance (C) is a common pitfall. Prioritizing manual testing over test automation is not a logical success factor for test automation (B). Using the test automation solution to automatically log defect is not a good practice as even false positive defects will be logged.

STF1-4 (K2) Explain the place of Selenium WebDriver in TAA

4. In the Test Automation Architecture (TAA), what is the primary role of Selenium WebDriver?

A) Selenium WebDriver is responsible for storing test execution results in a centralized test management system.

B) Selenium WebDriver interacts with the browser to simulate user actions.

C) Selenium WebDriver is primarily used for generating test scripts in a low-code format, allowing non-technical users to automate tests.

D) Selenium WebDriver is used to script unit tests in the backend services of an application.

Answer: B) Selenium WebDriver interacts directly with the browser to simulate user actions, serving as a key tool for automating UI tests. (As per section 1.4 in the syllabus)

STF1-5 (K2) Understand the risks and benefits of using Selenium WebDriver

5. Which of the following statements correctly highlights characteristics of Selenium WebDriver for test automation?

A) Selenium WebDriver enables cross-browser testing, but its lack of support for advanced user interactions makes it unsuitable for complex UI testing.

B) Selenium WebDriver offers extensive browser compatibility but requires additional tools for managing browser-specific behaviors and configurations.

C) Selenium WebDriver automates tests for mobile applications directly, making it the best tool for both web and mobile automation without the need for extra tools.

D) Selenium WebDriver ensures high test execution speed, but it struggles with executing tests on headless browsers, which can slow down test performance.

Answer: B) Selenium WebDriver provides a wide range of browser compatibility, but it requires additional tools for managing browser-specific behaviors and configurations.

Explanation:

A) Selenium WebDriver enables cross-browser testing, but its lack of support for advanced user interactions makes it unsuitable for complex UI testing. A is incorrect because the second part of the answer is false. Selenium WebDriver does indeed have support advanced user interactions, such as mouse movements, keyboard inputs, and drag-and-drop actions.

C) Selenium WebDriver automates tests for mobile applications directly, making it the best tool for both web and mobile automation without the need for extra tools. C is incorrect because Selenium WebDriver is primarily focused on web applications. For mobile application testing, additional tools like Appium are needed for mobile automation.

D) Selenium WebDriver ensures high test execution speed but it struggles with executing tests on headless browsers, which can slow down test performance. D is incorrect because Selenium WebDriver can execute tests on headless browsers (for example Headless Chrome or Firefox) efficiently, and typically, headless browsers improve performance by removing the need for rendering a UI.

STF1-6 (K2) Explain the reason and purpose for metric collection in automation

6. Why is metric collection important in test automation?

A) Metric collection is used to automate the process of reporting test results, ensuring the accuracy of test execution logs.

B) Metric collection helps track the efficiency and effectiveness of the test automation process, enabling continuous improvement and decision-making.

C) Metric collection ensures that all automated tests run without errors, preventing any test failures from occurring during execution.

D) Metric collection is used to monitor system performance during test execution, focusing on CPU and memory usage.

Answer: B) Metric collection helps track the efficiency and effectiveness of the test automation process, enabling continuous improvement and decision-making.

Explanation:

A) Metric collection is used primarily to automate the process of reporting test results, ensuring the accuracy of test execution logs is incorrect because while metrics may include reporting aspects, the primary purpose of metric collection is to assess the overall effectiveness and efficiency of the automation process rather than just automating result reporting.

C) Metric collection ensures that all automated tests run without errors, preventing any test failures from occurring during execution is incorrect because metrics do not prevent test failures. Instead, they provide insights into test performance, coverage, and efficiency, which can help improve the process but do not eliminate failures automatically.

D) Metric collection is used to monitor system performance during test execution, focusing on CPU and memory usage is incorrect because the main purpose of metric collection in test automation is to evaluate test effectiveness and efficiency, not to monitor system performance metrics like CPU and memory usage.

STF1-7 (K2) Understand and compare objectives of using the Selenium toolset (WebDriver, Selenium IDE, Selenium Grid)

7. Which of the following statements MOST accurately compares the objectives and use of Selenium WebDriver, Selenium IDE, and Selenium Grid?

A) Selenium WebDriver is primarily used for automating complex web application interactions programmatically, Selenium IDE is a tool for creating and executing simple test scripts via a browser plugin, and Selenium Grid allows for parallel execution of tests across multiple machines and browsers, making it ideal for scalability.

B) Selenium WebDriver automates tests by recording user actions in the browser, Selenium IDE requires code writing to create test scripts, and Selenium Grid is used for managing test execution on a single machine.

C) Selenium WebDriver supports automation on both web and mobile applications, Selenium IDE is a powerful tool for API testing, and Selenium Grid helps in debugging test scripts by executing them on different machines.

D) Selenium WebDriver is used for running tests sequentially on a single browser instance, Selenium IDE is a code-free tool for executing scripts on mobile devices, and Selenium Grid is used for running automated tests on virtual machines only.

Answer: A) Selenium WebDriver is primarily used for automating complex web application interactions programmatically, Selenium IDE is a tool for creating and executing simple test scripts via a browser plugin, and Selenium Grid allows for parallel execution of tests across multiple machines and browsers, making it ideal for scalability.

Explanation:

B) Selenium WebDriver automates tests by recording user actions in the browser, Selenium IDE requires code writing to create test scripts, and Selenium Grid is used for managing test execution on a single machine is incorrect because Selenium WebDriver does not record user actions. Instead, it is a programming interface for automating browser actions. Selenium IDE is a code-free tool that allows test creation through a browser plugin without the need for writing code, and Selenium Grid is specifically designed for parallel execution, not single-machine management.

C) Selenium WebDriver supports automation on both web and mobile applications, Selenium IDE is a powerful tool for API testing, and Selenium Grid helps in debugging test scripts by executing them on different machines is incorrect because Selenium WebDriver is focused on web applications, with mobile testing handled by Appium. Selenium IDE is not used for API testing; it is for UI test automation. Selenium Grid does not focus on debugging but rather on running tests in parallel across multiple machines.

D) Selenium WebDriver is used for running tests sequentially on a single browser instance, Selenium IDE is a code-free tool for executing scripts on mobile devices, and Selenium Grid is used for running automated tests on virtual machines only is incorrect because Selenium WebDriver can run tests in parallel (with proper configuration) and is not limited to a single browser instance. Selenium IDE does not support native mobile device testing; Appium is the tool for that. Selenium Grid is used for parallel test execution across multiple machines and browsers, not just virtual machines.

STF1-5 (K2) Understand the risks and benefits of using Selenium WebDriver

8. Which of the following is a benefit of using Selenium WebDriver for automated testing?

A) It only supports Google Chrome for automated testing

B) It can detect defects missed by API-level testing by testing at the UI level

C) It requires a high upfront investment due to licensing fees

D) It cannot be used in Agile teams due to its complexity

Answer: B) It can detect defects missed by API-level testing by testing at the UI level

Explanation:

Selenium WebDriver is a tool designed to automate UI testing, meaning it tests the application’s user interface. As a result, it can uncover issues that may not be caught when only API-level testing is performed, making it valuable for ensuring that the UI functions correctly. Unlike option a), Selenium WebDriver supports multiple browsers, and unlike option c), it is an open-source tool, so there are no high licensing fees. d) Tools complexity and its use in agile is not correlated.

STF1-7 (K2) Understand and compare objectives of using the Selenium toolset (WebDriver, Selenium IDE, Selenium Grid)

9. Which of the following BEST describes the primary purpose of Selenium IDE in the Selenium toolset?

A) To provide a highly flexible and scalable framework for complex automation tasks.

B) To allow quick and simple creation of test cases through browser interaction recording and playback.

C) To enable test execution across multiple machines and browsers concurrently.

D) To interact directly with the browser using an object-oriented API for detailed web automation.

Answer: B) To allow quick and simple creation of test cases through browser interaction recording and playback.

Explanation:

Selenium IDE is primarily used for quickly recording and playing back browser interactions, making it suitable for simple and short-term test automation tasks. It is not as flexible or scalable as Selenium WebDriver and is not designed for concurrent test execution like Selenium Grid.

STF2-1 (K3) Analyze HTML and XML documents

10. Given the following HTML snippet, which of the following statements is TRUE regarding the <img> tag?

```
<!DOCTYPE html>
<html>
        <body>
                <img src="image.jpg" alt="A very wide picture" width="600" height="400">
        </body>
</html>
```

A) The alt attribute is used to specify the width of the image.

B) The width and height attributes define the actual size of the image file on the server.

C) The alt attribute provides a text description of the image, which is important for accessibility.

D) The src attribute is used to specify the alternative text for the image.

Answer: C) The alt attribute provides a text description of the image, which is important for accessibility.

Explanation:

A) Incorrect. The alt attribute is used to provide a textual description of the image (for accessibility or when the image cannot be displayed), not the image's width.

B) Incorrect. The width and height attributes in the <img> tag define the display size of the image on the webpage, not the actual size of the image file itself on the server.

C) Correct. The alt attribute provides a textual description of the image, which is important for users with visual impairments who use screen readers, as well as when the image cannot be loaded.

D) Incorrect. The src attribute specifies the path or URL to the image file, not the alternative text. The alternative text is provided by the alt attribute.

STF2-2 (K3) Apply XPath to search XML documents

11. Given the following XML document, which of the following XPath expressions will select all the author elements of books that were published after the year 2000?

```
<library>
        <book>
                <title>Book A</title>
                <author>Author A</author>
                <year>1998</year>
        </book>
        <book>
                <title>Book B</title>
                <author>Author B</author>
                <year>2005</year>
        </book>
        <book>
                <title>Book C</title>
                <author>Author C</author>
                <year>2010</year>
        </book>
</library>
```

A) /library/book[year>2000]/title
B) //book[year>2000]/author
C) /library/book/author[year>2000]
D) //book[year>2000][author]

Answer: B) //book[year>2000]/author

Explanation:

A) Incorrect. This XPath expression selects book elements under the library root, where the year is greater than 2000, and then retrieves the title element (not the author) of those books. This is a valid expression but does not return the desired result.

B) Correct. This expression selects all book elements in the document, where the year is greater than 2000, and then selects the author element of each matched book. The // allows searching throughout the entire document, not just under the library.

C) Incorrect. This expression is invalid because it attempts to filter the author element directly using the year value, which is not correct in this context. The year element should be filtered at the book level, not the author level.

D) Incorrect. This expression is not valid. While it tries to find book elements with a year greater than 2000, the additional [author] condition is redundant and would cause XPath to try to match book elements that contain author elements. This does not properly filter by year.

STF2-3 (K3) Apply CSS locators to find elements in HTML documents
12. Consider the following HTML page source:

```
<html>
        <body>
                <div class="A4Q_Selenium">
                        <p class="A4Q_">Exam Content here.</p>
                </div>
        </body>
</html>
```

What would be the MOST appropriate locator to use to locate the p element for the above page source?

A. using XPATH ‘/html/body/div/div’
B. Using the p element id
C. Using the ClassName locator to be equal to ‘A4Q’
D. Using the CSS selector ‘p.A4Q_’

Answer D is correct. The CSS selector will pinpoint the element p in the page source. Answer A is incorrect as it is the absolute locator and ends with ‘div’ instead of ‘p’. Answer B is incorrect as the p element does not have an id attribute. Answer C is incorrect as the element ClassName for the p element is not ‘A4Q’ but rather ‘A4Q_’.

STF2-1 (K3) Analyze HTML and XML documents
13. Consider the following XML document:

```
<bookstore>
        <book>
                <title>XML for Beginners</title>
                <author>John Doe</author>
                <price>29.99</price>
        </book>
        <book>
                <title>Advanced XML</title>
                <author>Jane Smith</author>
                <price>39.99</price>
        </book>
</bookstore>
```

You need to extract all book titles from this XML document using an XPath expression. Which of the following XPath expressions would correctly return the titles of all books in the document?

A) //book/title
B) //bookstore/book/name
C) /bookstore/book/titles
D) //title/book

Answer: A) //book/title

Explanation:

A) //book/title is the correct XPath expression as it selects all <title> elements that are children of <book> elements, regardless of their position in the document.

B) //bookstore/book/name will not work as the name is not a child of the book node.

C) /bookstore/book/titles would not work as “titles” is not a valid node.

D) //title/book is incorrect because it incorrectly reverses the order of elements in the XPath query.

STF2-3 (K3) Apply CSS selectors to find elements in HTML documents
14. Given the following HTML document:

```
<html>
        <body>
                <ul id="menu">
                        <li><a href="#home">Home</a></li>
                        <li><a href="#services">Services</a></li>
                <li><a href="#contact">Contact</a></li>
                </ul>
        </body>
</html>
```

Which of the following CSS selectors would correctly select the <a> tag inside the second <li> element?

A) #menu li:nth-child(2) a
B) #menu a:nth-of-type(2)
C) li:nth-child(2) a
D) #menu li a:nth-child(2)

Answer: A) #menu li:nth-child(2) a

Explanation:

A) correctly uses the nth-child(2) pseudo-class to select the second <li> child of the #menu and then selects the <a> tag inside it. This precisely targets the second <a> inside the <ul>.

B) is incorrect because a:nth-of-type(2): Selects the second <a> tag within the #menu element, regardless of the <li> structure.

This would incorrectly select <a href="#contact">Contact</a> because it's the second <a> child of the #menu parent.

C) is incorrect because this selector is not specific to the #menu element. It could select the <a> tag inside the second <li> of any <ul> in the document, making it less precise.

D) is incorrect because it assumes the second <a> is a child of the <li>, but nth-child(2) is applied to the <li> itself, not its children.

STF2-2 (K3) Apply XPath to search XML documents
15. Given the following XML document:

```
<store>
        <product>
                <name>Product A</name>
                <price>25</price>
                <category>Electronics</category>
        </product>
        <product>
                 <name>Product B</name>
                <price>15</price>
                <category>Books</category>
        </product>
        <product>
                <name>Product C</name>
                <price>30</price>
                <category>Electronics</category>
        </product>
</store>
```

Which of the following XPath expressions would select the <name> of all products that belong to the "Electronics" category and cost more than 20?

A) //product[category='Electronics' and price>20]/name
B) //product[name='Electronics' and price>20]/name
C) //product[category='Electronics']/name
D) //product[price>20]/name

Answer: A) //product[category='Electronics' and price>20]/name

Explanation:

A) correctly selects all <product> elements where the <category> is "Electronics" and the <price> is greater than 20. It then selects the <name> of those products.

B) is incorrect because it is looking for a product where the <name> is "Electronics", but "Electronics" is a category, not a product name.

C) is incorrect because it selects all products in the "Electronics" category but does not filter by price.

D) is incorrect because it selects all products with a price greater than 20, regardless of their category.

STF3-1 (K3) Use appropriate logging and reporting mechanisms

16. You are testing a web application using Selenium 4 and need to generate a comprehensive test report after each test execution. The report should include the following:

- The status of the test (pass/fail)
- Detailed logs of the test execution
- Screenshots captured at the moment of failure
- A summary report that aggregates all the test data (test name, execution time, passed/failed status, logs, and screenshots).

Which of the following approaches is the most efficient and reliable way to achieve this?

A) Use a test framework (e.g., TestNG or pytest) to generate detailed reports, integrate logging for execution logs, and capture screenshots on failures.

B) Manually implement logging and reporting for each test case by writing custom code to capture logs, take screenshots, and generate the report after each test.

C) Use the sleep() method to pause the active execution thread between each test, and after the test execution, manually take screenshots and write the test status and logs to a text file.

D) Rely on visual inspection after each test execution, taking screenshots manually if a failure occurs and using basic print statements to output test results to the console.

Answer: A) Use a test framework such as TestNG or JUnit to automatically generate detailed reports, integrate logging frameworks like Log4j for execution logs, and implement a listener to capture screenshots during failures. The framework should aggregate all the data into a single report at the end of the test suite.

Explanation:

A) Correct. Modern testing frameworks like TestNG or pytest provide built-in support for generating comprehensive reports. By integrating a logging framework, you can capture detailed logs of test execution. Additionally, screenshots can also be automatically captured during failures. This approach allows you to automatically generate a detailed summary report at the end of the test suite, which aggregates all necessary information (status, logs, screenshots).

B) Incorrect. It is less efficient because manually implementing logging and reporting for each test is time-consuming and prone to errors. Additionally, stopping the test after each test case to generate the report reduces test efficiency.

C) Incorrect. This is ineffective because using sleep() to pause between tests introduces unnecessary delays and does not provide a reliable method for capturing screenshots or logs. It also

requires manual intervention, which defeats the purpose of automation.
D) Incorrect. It is not recommended because relying on manual inspection and basic print statements for test results is time-consuming and does not provide a structured or scalable approach to managing test logs, results, and screenshots.

STF3-2 (K3) Use hard and soft assertions

17. Which of the following BEST describes the difference between hard and soft assertions?

A) Hard assertions stop the test execution immediately when a condition fails, while soft assertions allow the test to continue even if a condition fails and report all failures at the end.
B) Hard assertions allow the test to continue even if a condition fails, while soft assertions stop the test execution immediately when a condition fails.
C) Hard assertions are used to validate the presence of elements on the page, while soft assertions are used for validating page title and URLs.
D) Hard assertions are only used in Java, while soft assertions are used in other programming languages supported by Selenium.

Answer: A) Hard assertions stop the test execution immediately when a condition fails, while soft assertions allow the test to continue even if a condition fails and report all failures at the end.

Explanation: A) Correct. Hard assertions halt the test execution as soon as the condition fails. Soft assertions allow the test to continue executing even if an assertion fails, and the failures are collected and reported at the end of the test.
B) Incorrect. This option has reversed the behaviour of hard and soft assertions.
C) Incorrect. Both hard and soft assertions can be used for any condition, not limited to specific elements or properties like page titles or URLs.
D) Incorrect. Both hard and soft assertions are available in various programming languages supported by Selenium, not just limited to Java.

STF3-3 (K2) Understand navigation on web browsers

18. You are automating a test for a website using Selenium 4 that needs to rely on the browser's navigation history. The test needs to follow these steps:

1. Navigate to the homepage.

2. Click on a link to go to the contact page.
3. After interacting with the contact page, go back to the homepage.
4. Finally, navigate forward to the contact page again.

Which of the following sequences BEST perform the navigation based on the above requirements?

A) driver.get("homepage_URL"), driver.get("contact_URL"), driver.get("homepage_URL"), driver.get("contact_URL").

B) driver.get("homepage_URL"), driver.back(), driver.get("contact_URL"), driver.forward().

C) driver.get("homepage_URL"), driver.navigate().back(), driver.navigate().forward(), driver.get("contact_URL").

D) driver.get("homepage_URL"), driver.navigate().to("contact_URL"), driver.navigate().back(), driver.navigate().to("contact_URL").

Answer:D)driver.get("homepage_URL"), driver.navigate().to("contact_URL"), driver.navigate().back(), driver.navigate().to("contact_URL").

Explanation:

D) Correct.

Step 1: Navigate to the homepage

driver.get("homepage_URL"): Opens the homepage.

Step 2: Navigate to the contact page

driver.navigate().to("contact_URL"): Navigates to the contact page using the provided URL.

Step 3: Go back to the homepage

driver.navigate().back(): Goes back to the homepage using the browser's history.

Step 4: Navigate forward to the contact page

driver.navigate().to("contact_URL"): Moves forward to the contact page using the browser's history.

A) Incorrect. This sequence uses driver.get() for every navigation, which reloads the pages instead of relying on the browser's navigation history.

B) Incorrect. The driver.back() command is used before navigating to the contact page, which would fail since there's no page to go back to yet.

C) Incorrect. The mix of driver.navigate().back() and driver.get() creates inconsistencies and does not properly rely on the browser's navigation history.

STF3-4 (K3) Use WebDriver commands to change window / tab context in web browsers

19. In Selenium 4, you are automating a scenario where a button click opens a new browser tab. After performing actions on the new tab, you need to switch between the original tab and the new one. What is the correct approach for handling tab and window switching in Selenium 4?

A) Use a method to retrieve all open window handles, then switch between the windows using the respective window handle.

B) Use a specific command to refer to the first tab as "tab1" and the second as "tab2," then switch between them using these labels.

C) Open a new tab using a window command and switch to it directly, without the need to manage window handles.

D) Close all open windows except the first one, and the remaining window will automatically become the active window.

Answer: A) Use a method to retrieve all open window handles, then switch between the windows using the respective window handle.

Explanation:

A) Correct. Selenium 4, to switch between multiple tabs or windows, you retrieve all window handles using the appropriate method. Each tab or window has a unique window handle, and you can use these handles to switch between the tabs.

B) Incorrect. Selenium does not assign specific labels like "tab1" or "tab2" to windows. You need to work with the window handles, which are unique identifiers for each open tab or window.

C) Incorrect. You cannot directly switch between tabs without using window handles. A new tab needs to be accessed using the corresponding window handle, not by a specific window command.

D) Incorrect. Closing windows will not automatically switch focus to the remaining windows. To switch to another window, you must explicitly handle it by switching to the respective window handle.

STF3-5 (K3) Use WebDriver commands to capture screenshots of web pages

20. You are automating a web test in Selenium 4 and need to capture a screenshot when a specific error message is displayed on the webpage. However, the error message might appear at any point during the execution of the test. You want to ensure that a screenshot is captured at the moment the error appears and is saved to a specific location. Which of the following is the best strategy for achieving this in Selenium 4?

A) Periodically check for the visibility of the error message and trigger the screenshot capture as soon as it appears, saving it to a predefined folder.

B) Capture a screenshot before starting the test and manually check for the error message in the saved image after test execution.

C) Capture a screenshot at the start of the test and only if an error message appears, save the screenshot at that point, overriding any previously saved screenshots.

D) Wait for the error message to appear using an explicit wait, and then take a screenshot only after confirming the error message is visible, saving it with a timestamp to avoid overwriting.

Answer: D) Wait for the error message to appear using an explicit wait, and then take a screenshot only after confirming the error message is visible, saving it with a timestamp to avoid overwriting.

Explanation:

D) Correct. The most reliable approach is to explicitly wait for the error message to become visible, ensuring that it appears during the test execution. Once the error message is confirmed to be visible, you can trigger the screenshot capture. Saving the screenshot with a timestamp ensures that the file is uniquely named and prevents overwriting of previous screenshots, which is crucial for maintaining test logs and records.

A) Incorrect. While checking periodically for the visibility of the error message is possible, it introduces unnecessary complexity and might not be as efficient or reliable as explicitly waiting for the element's visibility. It could also cause race conditions if not handled properly.

B) Incorrect. Capturing the screenshot before the test starts, and then manually checking the saved image for the error message, is inefficient. You should capture the screenshot at the point the error message is detected, not before or after.

C) Incorrect. Capturing a screenshot at the start of the test and then overriding it when the error occurs is inefficient. It does not guarantee capturing the correct error message at the moment of failure, and overwriting screenshots can lead to losing important data.

STF3-6 (K4) Differentiate between various strategies to locate GUI elements

21. Consider the following HTML snippet from a webpage:

```
<div class="product-list">
        <div class="product-item" id="product1">
                <h2 class="product-title">Product A</h2>
                <button class="buy-btn" data-product-id="1">Buy Now</button>
        </div>
        <div class="product-item" id="product2">
                <h2 class="product-title">Product B</h2>
                <button class="buy-btn" data-product-id="2">Buy Now</button>
        </div>
</div>
```

Which locator strategy would be MOST effective for identifying the "Buy Now" button for Product A in this scenario?

A) Use XPath to target the <button> element by its index and position within the product-list class.

B) Use id="product1" to target the <div> element, and then use cssSelector to locate the button within that div.

C) Use cssSelector to locate the button element by its class buy-btn and the data-product-id="1" attribute.

D) Use XPath to target the button element by its class buy-btn and inner text "Buy Now" for all buttons.

Answer: C) Use cssSelector to locate the button element by its class buy-btn and the data-product-id="1" attribute.

Explanation:

C) Correct. The data-product-id="1" attribute is a unique identifier for the "Buy Now" button associated with Product A. Using cssSelector with the attribute data-product-id="1" is both efficient and precise, ensuring that the button for Product A is targeted without ambiguity.

A) Incorrect. Using XPath to target the button by its index is less reliable and less maintainable, especially if the page structure changes. Index-based locators can break easily when the number of product items changes.

B) Incorrect. While id="product1" can be used to locate the parent div for Product A, it is not the most efficient way to locate the button. Instead, directly targeting the button via the data-product-id attribute provides a more robust solution.

D) Incorrect. Targeting buttons by their class buy-btn and text content "Buy Now" can be ambiguous and is less robust. If the button text changes or if multiple buttons have the same text, this strategy will not work as expected.

STF3-7 (K3) Use WebDriver commands to get state of GUI elements

22. You are automating a web application. You need to check the state of a button on the page. The button might be in one of three states: enabled, disabled, or hidden. Which combination of properties would be the most effective to determine the button’s state?

A) Check if the button has any text content (non-empty), check if its background color is lighter, and verify if the button is positioned on the page.

B) Check if the button is visible in the page layout, ensure it has an enabled state based on its visual styling, and verify that it is not in a disabled state.

C) Check if the button has a non-empty value in the href attribute, validate that it is not being overlapped by other elements, and ensure the button is focused.

D) Check if the button’s parent container is visible, verify that the button’s text is static, and check for the presence of any JavaScript event listeners.

Answer: B) Check if the button is visible in the page layout, ensure it has an enabled state based on its visual styling, and verify that it is not in a disabled state.

Explanation:

B) Correct. Determining the state of a button involves checking whether it is visible in the page layout (ensuring it is not hidden), it is about visual styling (enabled buttons are usually styled differently from disabled ones), and ensuring that it is not in a disabled state (visually, a disabled button often appears greyed out or less interactive).

A) Incorrect. While checking text content and the background color could help, it does not directly confirm if the button is enabled or disabled. Also, a visible button is not necessarily interactive.

C) Incorrect. The href attribute is not relevant for a button. Additionally, verifying that the button is focused and not overlapped is not sufficient to determine whether it is enabled or disabled.

D) Incorrect. Checking the parent container’s visibility and the button’s text does not provide clear information about the button’s state. Additionally, JavaScript event listeners are unrelated to determining whether a button is enabled or disabled.

STF3-8 (K3) Use WebDriver commands to interact with GUI elements

23. Which of the below BEST describes the Send Keys method on Selenium?

A) The Send Keys method requires no parameters.

B) The Send Keys method can only be used after the clear method is executed.

C) One parameter used by the Send Keys method is of float data type.

D) The Send Keys method requires two parameters to be executed.

Answer: D) The Send Keys method requires two parameters to be executed.

Explanation:

A) Incorrect. The Send Keys method requires two parameters to be executed, as per section 3.3 of the syllabus.

B) Incorrect. The Send Keys method does not require the clear method to be executed first as when invoked, the Send Keys automatically clears the textbox.

C) Incorrect. The Set Keys method uses the string parameter and not the float parameter.

D) Correct. The Send Keys method needs the element to interact with and the text to enter the element. This is as per the syllabus section 3.3.

STF3-9 (K3) Use WebDriver commands to interact with user prompts in web browsers

24. Which of the following is TRUE for a web browser alert interaction using Selenium 4?

A) An alert can be dismissed using the cancel () method.

B) An alert can only be accepted as it cannot be dismissed using Selenium 4.

C) Selenium 4 cannot interact with an alert as the method has been deprecated.

D) To interact with an alert, the automation context needs to be switched.

Answer: D) To interact with an alert, the automation context needs to be switched.

Explanation:

A) Incorrect. The dismiss() method is used to dismiss an alert. cancel() method does not exist for this purpose.

B) Incorrect. Alerts can be accepted or dismissed.

C) Incorrect. Selenium 4 has built-in methods to interact with alerts.

D) Correct. Alerts appear as modal windows which need to be handled before interactions with the browser elements can be continued. In order for the TAS to interact with the alert modal windows, the context needs to be switched. (from section 3.3.1 of the syllabus).

STF3-10 (K2) Understand the new features of Selenium
25. Which of the following statements about Selenium 4's new features is NOT true?

A) Selenium 4 introduces a new Grid architecture that supports distributed testing.

B) The new Relative Locators feature in Selenium 4 allows elements to be located in proximity to other elements, such as to the left, right, above, or below.

C) Selenium 4 removes the support for JavaScriptExecutor in favor of a new API for executing JavaScript directly from WebDriver commands.

D) Selenium 4 introduces the W3C WebDriver standard, which ensures better cross-browser compatibility and consistency in WebDriver commands.

Answer: C) Selenium 4 removes the support for JavaScriptExecutor in favor of a new API for executing JavaScript directly from WebDriver commands.

Explanation:

A) Answer A is true. Selenium 4 introduces a new, more scalable Grid architecture, allowing integration with Docker and Kubernetes for distributed testing. This provides improved management and scalability for running tests across multiple environments.

B) Answer B is tue. Selenium 4 introduces Relative Locators, which let you find elements in relation to other nearby elements, providing a more flexible approach to element location.

C) Answer C is not true therefore the answer to the question. Selenium 4 did not remove support for JavaScriptExecutor. It continues to allow the execution of JavaScript through the JavascriptExecutor interface in WebDriver. There is no new API introduced that replaces it, so this statement is false.

D) Answer D is correct. Selenium 4 is fully aligned with the W3C WebDriver standard, which ensures that WebDriver commands are more consistent and reliable across different browsers, contributing to better cross-browser compatibility.

STF3-11 (K1) Remember the different locators used by Selenium
26. Which of the following is NOT a valid locator strategy introduced in Selenium 4?

A) By.linkText

B) By.XPath

C) By.id

D) By.ancestor

Answer: D) By.ancestor

Explanation:

Selenium 4 retains the use of common locator strategies such as By.id, By.XPath, and By.linkText. These strategies are still available for locating elements. By.Ancestor is not a valid locator strategy

STF3-2 (K3) Use hard and soft assertions

27. You are writing test scripts for a web application, and you use hard assertions to verify expected outcomes. Consider the following snippets of code in a test framework (both codes are equivalent):

```
In Java:
public void testLogin() {
    driver.get("https://example.com/login");
    WebElement usernameField =
driver.findElement(By.id("username"));
    WebElement passwordField =
driver.findElement(By.id("password"));

    usernameField.sendKeys("testuser");
    passwordField.sendKeys("password123");

    WebElement loginButton = driver.findElement(By.id("login"));
    loginButton.click()
    assertTrue(driver.getCurrentUrl().contains("dashboard"));
}
```

```
In Python:
def test_login(self): driver = webdriver.Chrome()
driver.get("https://example.com/login")
username_field = driver.find_element_by_id("username")
password_field = driver.find_element_by_id("password")
username_field.send_keys("testuser")
password_field.send_keys("password123")
login_button = driver.find_element_by_id("login")
login_button.click()
self.assertTrue("dashboard" in driver.current_url) driver.quit()
```

Which of the following statements MOST accurately describes the effect of using the assertion (assertTrue or self.assertTrue) in this scenario?

A) The test will continue to execute even if the assertion fails, allowing further checks to be made.

B) If the assertion fails, the test will immediately stop executing, and no further steps will be performed.

C) The assertion will automatically retry the verification until it passes or times out.

D) The assertion will allow the test to proceed, but it will mark the test as failed in the final report.

Answer: B) If the assertion fails, the test will immediately stop executing, and no further steps will be performed.

Explanation:

B) is correct because a hard assertion, such as assertTrue or self.assertTrue, halts the execution of the test if the assertion fails. It prevents any subsequent actions from taking place.

A) is incorrect because a hard assertion does not allow the test to continue after failure; it halts the test immediately.

C) is incorrect because a hard assertion does not automatically retry. It simply fails once and stops further execution.

D) is partially true in that the test will be marked as failed in the report, but the key characteristic of a hard assertion is that it stops the test immediately.

STF3-3 (K2) Understand navigation on web browsers

28. In Selenium 4, which of the following methods is used to navigate the browser to a specific URL?

A) driver.open(url)

B) driver.get(url)

C) driver.load(url)

D) driver.goTo(url)

Answer: B) driver.get(url)

Explanation:

B) is correct because driver.get(url) is the correct method to navigate the browser to a specific URL in Selenium 4.

A), C), and D) are incorrect because those are not valid methods for navigation in Selenium 4.

STF3-6 (K4) Differentiate between various strategies to locate GUI elements

29. In Selenium 4, relative locators have been introduced to enhance the flexibility and robustness of element identification based on their visual relationship with other elements on the page. Given this feature, which of the following scenarios would benefit the most from using relative locators, and why?

A) Locating an element based on its static attributes like id, class, or name

B) Identifying a dynamically positioned "Next" button that always appears directly below a "Previous" button, regardless of screen size

C) Finding an element with a fixed href value in a consistent, non-changing URL

D) Locating a form field based on its label tag for accessibility reasons

Answer: B) Identifying a dynamically positioned "Next" button that always appears directly below a "Previous" button, regardless of screen size.

Explanation:
B) is correct because relative locators like below() can be used to find elements based on their visual position relative to other elements. This is especially useful when elements are dynamically positioned, such as the "Next" button, which always appears below the "Previous" button, regardless of how the page is resized or rearranged.
A) is incorrect because static attributes like id, class, or name are more commonly used with traditional locators (like CSS selectors or XPath), not relative locators.
C) is incorrect because locating elements by fixed URL or attributes like href is not related to the use of relative locators. Relative locators are useful for elements based on their position relative to other elements.
D) is incorrect because while the label tag helps with accessibility, it is not a scenario where relative locators (like toLeftOf(), below(), etc.) would provide added value. It focuses on direct element identification.

STF3-8 (K3) Use WebDriver commands to interact with GUI elements
30. In Selenium, the get_attribute(String) method is often used to retrieve certain attributes of web elements. Which of the following reasons best explains why you would use this method in your automation script?

A) To simulate user interactions with web elements, such as clicking a button.
B) To retrieve dynamic values from web elements, such as the value or checked state, without altering the element.
C) To change the visual appearance of a web element during the test.
D) To submit forms and navigate to different pages.

Answer: B) To retrieve dynamic values from web elements, such as the value or checked state, without altering the element.

Explanation:
B) is correct because the get_attribute(String) method is used to retrieve the values of various attributes of a web element, such as value, checked, or placeholder, without modifying the element. It is typically used to verify the state or dynamic content of an element during testing.

A) is incorrect because user interactions like clicking a button are handled by methods like click(), not get_attribute().
C) is incorrect because get_attribute() does not change the visual appearance of elements; it only retrieves their attributes.
D) is incorrect because form submission and navigation are typically handled using methods like submit() or get(), not by using get_attribute().

STF4-1 (K2) Understand which factors support and affect maintainability of test scripts

31. What is the main challenge when trying to increase the logic of automated test scripts?

A) Automated test scripts can always replicate human judgment without errors.
B) Increased complexity in automated scripts leads to a higher likelihood of failures.
C) Automation engineers should avoid coding any waiting mechanisms in scripts.
D) Test scripts become less maintainable as logic is added to the framework.

Correct Answer: B) Increased complexity in automated scripts leads to a higher likelihood of failures.
Explanation:
As the intelligence within automated test scripts increases to better simulate human judgment, the complexity of the scripts also rises. This added complexity introduces a higher likelihood of failures, making the maintenance and execution of the scripts more challenging. Thus, while adding intelligence is important, it needs to be balanced to avoid overcomplicating the automation.

STF4-2 (K3) Use appropriate wait mechanisms

32. When designing automated tests with Selenium, which of the following best practices ensures that the test scripts handle timing issues effectively without causing unnecessary delays or false positives?

A) Always use the sleep() method to pause the execution for a fixed amount of time before each action.
B) Use implicit wait for all actions, regardless of their expected timing, to ensure synchronization.
C) Use explicit wait to wait for a specific condition to be met before performing the next action.
D) Rely on the default wait time set by the browser to avoid writing additional code.

Correct Answer: C) Use explicit wait to wait for a specific condition to be met before performing the next action.

Explanation:
The best practice for handling timing issues in test automation is to use explicit wait, which waits for a specific condition (e.g., element visibility, element clickability) to be true before proceeding. This allows tests to wait only as long as necessary, minimizing unnecessary delays and preventing false failures.
A) Use of the sleep() method is a poor practice, as it introduces unnecessary fixed delays regardless of the situation.
B) Implicit wait can cause unnecessary delays if it is set too long and may not be suitable for all actions.
D) Relying solely on the default wait time is not optimal, as it does not offer flexibility for specific conditions.

STF4-3 (K4) Analyze GUI of SUT and use Page Objects to make its abstractions
33. Given a SUT with a complex form that includes multiple input fields, dropdowns, and buttons, you are tasked with creating a Page Object to interact with this form. Which of the following strategies would best align with the Page Object Pattern to ensure your automated tests remain maintainable and scalable?

A) Create a single Page Object class that directly interacts with all elements in the form, including form validation and business logic, and exposes them as test steps.
B) Create multiple Page Object classes, each one representing a specific section of the form, such as "Personal Information" and "Payment Details," and encapsulate only the UI interaction logic, avoiding any business assertions or validation logic within the Page Objects.
C) Create a single Page Object class that includes both UI interactions and validation logic to ensure all business rules are applied during test execution.
D) Create multiple Page Object classes, each representing an individual element of the form (e.g., one for the name field, another for the email field), and directly expose the Selenium WebDriver methods to the test scripts.

Answer: B) Create multiple Page Object classes, each one representing a specific section of the form, such as "Personal Information" and "Payment Details," and encapsulate only the UI interaction logic, avoiding any business assertions or validation logic within the Page Objects.

Explanation:
The best approach follows the principles of the Page Object Pattern, which suggests that Page Objects should encapsulate UI interaction logic and abstract it from the test scripts. The pattern advocates for modularization, meaning that each Page Object should represent a specific part or section of the form, rather than covering the entire form in a single class. Additionally, business assertions and validation logic should be kept separate from the Page Objects to ensure the Test Execution Layer remains focused on business logic, while the Page Object Layer handles UI interactions.
A) Incorrect. Mixing business logic and UI interactions in a single class violates the Page Object principles.
C) Incorrect. Page Objects should not handle business validation or assertions; they should only manage the interaction with the SUT's GUI.
D) Incorrect. Exposing Selenium WebDriver methods directly in the Page Objects contradicts the goal of encapsulation and abstraction.

STF4-4 (K4) Analyze test scripts and apply Keyword Driven Testing principles to building test scripts
34. In keyword-driven testing, which of the following is the primary benefit of using high-level keywords such as "Login" and "Search" in your test scripts?

A) They allow direct interaction with the System Under Test (SUT) without needing to define any actions or keywords.
B) They help in reducing script complexity by abstracting low-level actions like "Click" or "EnterText" into meaningful business operations, making the script more readable and easier to maintain.
C) They eliminate the need for external data files, as the entire test script is embedded with all necessary data.
D) They perform the same function as low-level keywords but without requiring the automation tool to execute any WebDriver commands.

Correct Answer: B) They help in reducing script complexity by abstracting low-level actions like "Click" or "EnterText" into meaningful business operations, making the script more readable and easier to maintain.

Explanation:
In Keyword Driven Testing, high-level keywords represent entire business operations or workflows (e.g., "Login", "Search") rather than individual UI actions (e.g., "Click", "EnterText"). By abstracting the low-level actions into high-level keywords, the test scripts become more readable, modular, and maintainable, reducing complexity. This also improves reusability, as the same high-level keywords can be used across multiple test cases.

A) is incorrect because high-level keywords still require underlying actions to interact with the SUT; they do not bypass the need for defined actions.
C) is incorrect because the use of external data files is often required for test data management in Keyword Driven Testing, regardless of high-level keywords.
D) is incorrect because high-level keywords still involve executing WebDriver commands in the background, they just abstract those commands into a more business-friendly language.

STF4-1 (K2) Understand which factors support and affect the maintainability of test scripts
35. Which of the following practices helps improve the long-term maintainability of test scripts?

A) Using absolute paths to locate elements in the HTML structure
B) Writing descriptive names for variables, functions, and constants
C) Avoiding the use of comments to keep the script concise
D) Rewriting the test scripts from scratch after each test run

Answer: B) Writing descriptive names for variables, functions, and constants
Explanation:
Writing descriptive names for variables, functions, and constants enhances the readability of the code. This practice makes it easier for anyone who works with the code in the future to understand its purpose and function. It reduces the cognitive load during code reviews and maintenance, thus improving the long-term maintainability of test scripts.

STF5-1 (K2) Understand the advantages and disadvantages of headless automation testing

36. Which of the following is a consideration when using headless browser testing with Selenium WebDriver?

A) Headless browsers provide a visible user interface for easy debugging.

B) Headless testing may make debugging more difficult due to the lack of a GUI.

C) Tests run faster but always simulate user activity with perfect accuracy.

D) Headless browser testing is not compatible with any CI/CD pipeline.

Correct Answer: B) Headless testing may make debugging more difficult due to the lack of a GUI.

Explanation:

One of the considerations when using headless browsers is that debugging can become more challenging since there is no visible user interface to track down failures. Headless testing focuses on performance but may hinder some forms of visual verification and troubleshooting.

A) is incorrect because headless browsers do not provide a visible user interface.

C) is incorrect because while tests may run faster, headless browsers do not always simulate user activity perfectly due to the absence of a GUI.

D) is incorrect because headless testing is specifically designed for easy integration into CI/CD pipelines, making it compatible with such systems

STF5-2 (K2) understands how machine learning can help in reducing false positives and maintenance effort

37. How can machine learning help reduce false positives and the maintenance effort in test automation?

A) By automatically rewriting the test scripts whenever the SUT changes.

B) By learning from test executions and suggesting alternative locators to handle minor changes in the SUT.

C) By eliminating the need for regular updates to the automation framework.

D) By manually updating the test data used in test cases.

Answer: B) By learning from test executions and suggesting alternative locators to handle minor changes in the SUT, reducing the need for manual maintenance.

Explanation:

Machine learning in the context of self-healing testing helps reduce false positives and maintenance efforts by analyzing and learning from test executions. It detects when locators become invalid due to changes in the System Under Test (SUT) and automatically suggests alternative, valid locators. This self-healing process minimizes the immediate need for manual intervention, allowing tests to continue running even when minor changes occur in the SUT.

A) Incorrect. While machine learning can help identify issues with locators, it does not automatically rewrite test scripts. Rewriting the entire script is not the goal; the focus is on fixing specific issues like broken locators to maintain test execution continuity.

C) Incorrect. While machine learning reduces the frequency of some manual updates (like fixing broken locators), it does not eliminate the need for framework updates. The framework may still need to evolve to support new functionality or integrate with different tools.

D) Incorrect. Machine learning focuses on improving the reliability of locators and automating the repair of broken tests. Test data updates are a separate concern and are not directly addressed by machine learning in self-healing testing.

STF5-3 (K2) Understand test parallelism and its advantages

38. Which of the following is a potential issue when running performance tests using Selenium in parallel on a single machine?

A) Reduced test execution speed due to multiple threads using separate machines.
B) Increased likelihood of deadlocks or thread blocking, affecting test accuracy.
C) The probe effect is eliminated when using parallel testing with Selenium Grid.
D) Resource consumption is minimized when running multiple tests concurrently on the same browser.

Answer: B) Increased likelihood of deadlocks or thread blocking, affecting test accuracy.

Explanation:

B) Correct. Running multiple tests in parallel on a single machine may cause resource contention, leading to deadlocks or thread blocking. This can result in inaccurate test results due to the overload of the machine's processing and memory capacity.

A) Incorrect. Parallelism on separate machines would avoid these issues. The problem arises when multiple threads are running on a single machine.

C) Incorrect. The probe effect is not eliminated by Selenium Grid; it can still occur if the machine is overloaded with too many threads, affecting performance measurements.

D) Incorrect. Running multiple tests on the same browser instance can lead to increased resource consumption and lag, but it does not minimize resource consumption.

STF5-1 (K2) Understand the advantages and disadvantages of headless automation testing
39. What is headless automation in the context of Selenium?

A) Running tests without opening the browser window or GUI
B) Running tests on a browser that requires no internet connection
C) Running tests in the background while the user interacts with the web page
D) Running tests only on mobile devices

Answer: A) Running tests without opening the browser window or GUI

Explanation:

Headless automation refers to running automated tests on a browser without displaying the browser window or GUI. It allows for faster execution of tests, especially useful in continuous integration (CI) environments where visual feedback is unnecessary.

STF5-3 (K2) Understand test parallelism and its advantages
40. What is the recommended way to minimize the probe effect when using Selenium for performance testing?

A) Use a single machine to simulate all users during the tests.
B) Execute tests using only one browser instance to reduce system load.
C) Use Selenium Grid to run tests on multiple devices concurrently and in headless mode.
D) Run tests during non-peak hours to avoid system overload.

Answer: C) Use Selenium Grid to run tests on multiple devices concurrently and in headless mode.

Explanation:

The text suggests that to minimize the probe effect, Selenium tests should ideally be executed on multiple devices concurrently, and headless mode should be used. This approach reduces the impact of the automation on the system's performance, as opposed to running all tests on a single machine. Selenium Grid facilitates the concurrent execution of tests on multiple devices, limiting the probe effect.