Question 1: What is JavaScript? Explain the role of JavaScript in web development.

Answer: JavaScript is a scripting language used to create dynamic and interactive features on websites. It allows developers to manipulate HTML and CSS, handle events, validate input, and communicate with servers, making web pages more responsive and user-friendly.

Question 2: How is JavaScript different from other programming languages like Python or Java?

Answer: JavaScript is primarily used for client-side web development and runs in the browser, while Python and Java are general-purpose languages commonly used for server-side programming. JavaScript is interpreted and supports prototype-based OOP, whereas Java and Python use class-based OOP.

Question 3: Discuss the use of <script> tag in HTML. How can you link an external JavaScript file to an HTML document?

Answer: The <script> tag is used to embed or reference JavaScript code in HTML. To link an external JavaScript file, use:

<script src="file.js"></script>

2. Variables and Data Types

Question 1: What are variables in JavaScript? How do you declare a variable using var, let, and const?

Answer: Variables store data values. var declares a function-scoped variable, let declares a block-scoped variable, and const declares a block-scoped constant that cannot be reassigned.

Question 2: Explain the different data types in JavaScript. Provide examples for each.

Answer: JavaScript data types include string ("Hello"), number (10), boolean (true), null (null), undefined (undefined), object ({}), and symbol (Symbol()).

Question 3: What is the difference between undefined and null in JavaScript?

Answer: undefined means a variable is declared but not assigned a value. null is an assigned value representing no value.

3. JavaScript Operators

Question 1: What are the different types of operators in JavaScript? Explain with examples.

Answer:

Arithmetic: +, -, *, /

Assignment: =

Comparison: ==, >, <

Logical: &&, ||

Question 2: What is the difference between == and === in JavaScript?

Answer: == compares values after type conversion, while === compares both value and type.

4. Control Flow (If-Else, Switch)

Question 1: What is control flow in JavaScript? Explain how if-else statements work with an example.

Answer: Control flow determines the execution order of statements. If-else executes code based on

conditions.

Question 2: Describe how switch statements work in JavaScript. When should you use a switch statement instead of if-else?

Answer: A switch compares a value with multiple cases. Use it when checking the same variable against multiple fixed values.

5. Loops (For, While, Do-While)

Question 1: Explain the different types of loops in JavaScript (for, while, do-while). Provide a basic example of each.

Answer:

For loop repeats a set number of times.

While loop repeats while a condition is true.

Do-while executes once before checking the condition.

Question 2: What is the difference between a while loop and a do-while loop?

Answer: While checks the condition first; do-while executes the loop once before checking.

6. Functions

Question 1: What are functions in JavaScript? Explain the syntax for declaring and calling a function.

Answer: Functions are reusable blocks of code. Declared using function name() {} and called using name().

Question 2: What is the difference between a function declaration and a function expression?

Answer: Function declaration is named and hoisted; function expression can be anonymous and is not hoisted.

Question 3: Discuss the concept of parameters and return values in functions.

Answer: Parameters receive input values, and the return statement sends back a result from the function.

7. Arrays

Question 1: What is an array in JavaScript? How do you declare and initialize an array?

Answer: An array holds multiple values in one variable. Example: let arr = [1, 2, 3];

Question 2: Explain the methods push(), pop(), shift(), and unshift() used in arrays.

Answer: push() adds to the end, pop() removes from the end, shift() removes from the start, unshift() adds to the start.

8. Objects

Question 1: What is an object in JavaScript? How are objects different from arrays?

Answer: Objects store data in key-value pairs. Arrays store ordered lists of values.

Question 2: Explain how to access and update object properties using dot notation and bracket notation.

Answer: Dot notation: obj.key

Bracket notation: obj["key"]

9. JavaScript Events

Question 1: What are JavaScript events? Explain the role of event listeners.

Answer: Events are actions like clicks. Event listeners detect and respond to them.

Question 2: How does the addEventListener() method work in JavaScript? Provide an example.

Answer: element.addEventListener("click", func) attaches a function to an event.

10. DOM Manipulation

Question 1: What is the DOM in JavaScript? How does JavaScript interact with the DOM?

Answer: DOM represents the structure of HTML. JavaScript can modify it using methods.

Question 2: Explain the methods getElementById(), getElementsByClassName(), and querySelector().

Answer: getElementById() selects by ID, getElementsByClassName() by class, querySelector() by CSS selector.

11. JavaScript Timing Events

Question 1: Explain the setTimeout() and setInterval() functions in JavaScript. How are they used for timing events?

Answer: setTimeout() runs code after a delay. setInterval() runs repeatedly at intervals.

Question 2: Provide an example of using setTimeout() to delay an action by 2 seconds.

Answer: setTimeout(() => alert("Hello"), 2000);

12. JavaScript Error Handling

Question 1: What is error handling in JavaScript? Explain the try, catch, and finally blocks with an example.

Answer: Error handling catches and manages runtime errors. try holds code, catch handles errors, finally always runs.

Question 2: Why is error handling important in JavaScript applications?

Answer: It prevents program crashes and ensures smooth execution.