**(Q1)**
Write the difference between Java & JavaScript.

**Java:**

- Java is an object-oriented programming language used for building standalone applications, web apps, Android apps, etc.
- Java is compiled (into bytecode using JVM).
- Java runs on JVM (Java Virtual Machine).
- Strongly typed (you must define data types).
- Used for backend development, enterprise applications, Android, desktop applications.
- Syntax is similar to C/C++ and is more complex.

**JavaScript:**

- JavaScript is a scripting language used mainly for making web pages interactive and dynamic.
- JavaScript is interpreted by web browsers.
- JavaScript runs directly on the browser or on Node.js.
- Loosely typed (no need to specify data types).
- Used for frontend development, web animations, validations, backend (Node.js), etc.
- Syntax is simpler and more flexible.

**(Q2)**
Why do we use JavaScript? Why is it so popular? (Advantages)

**Uses of JavaScript:**

- To make web pages interactive (buttons, forms, animations).
- To validate form input before sending to the server.
- To update content without refreshing the page (AJAX).
- To build frontend frameworks (React, Angular, Vue).
- To build backend servers using Node.js.

**Advantages:**

- Fast execution - Runs directly in the browser without needing compilation.
- Easy to learn - Simple and beginner-friendly syntax.
- Platform independent - Works on all browsers and devices.
- Huge community support - Many libraries and frameworks.
- Full-stack development -
  Frontend: React, Angular, Vue
  Backend: Node.js
- Rich interfaces - Allows animations, sliders, popups, dynamic content.

**(Q3)**

```
<!DOCTYPE html>
<html lang="en">
<head> <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Outputs: Console, Alert, Document</title>
</head>
<body>
  <script>
    function q3() {
      console.log("This shows in console");
      alert("This is a popup box");
      document.write("This shows on the page");
    }
    q3();
  </script>
</body>
</html>
```

**(Q4)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Var Let Const</title>
</head>
<body>
  <script>
    function q4() {
      var a = 10;
      {
        let b = 20;
        const c = 30;
        alert("Block scoped variables: b=" + b + ", c=" + c);
      }
      alert("Global/Function scoped: a=" + a);
    }
    q4();
  </script>
</body>
</html>
```

**(Q5)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Addition</title>
</head>
<body>
  <script>
    function q5() {
      let n1 = Number(prompt("Enter first number"));
      let n2 = Number(prompt("Enter second number"));
      let sum = n1 + n2;
      console.log(sum);
      alert("The sum is: " + sum);
    }
    q5();
  </script>
</body>
</html>
```

**(Q6)**

```
<!DOCTYPE html>
<html lang="en">
 <head><meta charset="UTF-8" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Most Significant Number</title>
 </head><body>
  <script>
   function q6() {
    let n1 = Number(prompt("Enter number 1"));
    let n2 = Number(prompt("Enter number 2"));
    let n3 = Number(prompt("Enter number 3"));
    if (n1 < 10 || n2 < 10 || n3 < 10) {
     alert("Please enter numbers with 2 digits or more");
} else {
      let max = n1;
      if (n2 > max)
      max = n2;
      if (n3 > max)
      max = n3;
      document.write("Largest number is " + max);
    }
   }
    q6();
  </script>
 </body>
</html>
```

**(Q7)**

```
<!DOCTYPE html>
<html lang="en">
<head><meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Fibonacci Series</title>
</head>
<body>
  <script>
    function q7() {
      let limit = Number(prompt("Enter the nth term:"));
      let n1 = 0, n2 = 1, nextTerm;
      let i = 0;
      document.write("Fibonacci: ");
      while (i < limit) {
        document.write(n1 + " ");
        nextTerm = n1 + n2;
        n1 = n2;
        n2 = nextTerm;
        i++;
      }
    }
    q7();
  </script>
</body>
</html>
```

**(Q8)**

```
<!DOCTYPE html>
<html lang="en">
<head><meta charset="UTF-8" />
 <meta name="viewport" content="width=device-width, initial-scale=1.0" />
 <title>Prime Number</title>
</head><body>
 <script>
  function q8() {
   let num = Number(prompt("Enter a number"));
   let isPrime = true;
   if (num <= 1) {
    isPrime = false;
   }
   for (let i = 2; i < num; i++) {
    if (num % i === 0) {
     isPrime = false;
     break;
    }
   }
   if (isPrime) {
    document.write(num + " is Prime.");
   }
   else {
    document.write(num + " is not Prime.");
   }
  }
  q8();
 </script>
</body>
</html>
```

**(Q9)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Factorial Number</title>
</head>
<body>
  <script>
      function q9() {
       function findFactorial(n) {
          let fact = 1;
          for (let i = 1; i <= n; i++) {
             fact = fact * i;
          }
          return fact;
       }
       let num = Number(prompt("Enter number for factorial"));
       alert("Factorial is: " + findFactorial(num));
     }
     q9();
  </script>
</body>
</html>
```

**(Q10)**

```
<!DOCTYPE html>
<html lang="en">
<head><meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>forEachArray</title>
</head><body>
  <script>
     function q10() {
       let arr = [];
       let size = Number(prompt("HEnter the number of Elements"));
       for (let i = 0; i < size; i++) {
          let val = prompt("Enter value for index " + i);
          arr.push(val);
       }
       document.write("<b>Array Items:</b><br>");
       arr.forEach(function(item) {
          document.write(item + "<br>");
       });
     }
     q10();
  </script>
</body>
</html>
```

**(Q11)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Pallindrome</title>
</head>
<body>
  <script>
     function q11() {
       let str = prompt("Enter a string");
       let len = str.length;
       let check = "Palindrome";

       for (let i = 0; i < len / 2; i++) {
          if (str[i] !== str[len - 1 - i]) {
             check = "Not Palindrome";
          }
       }
       document.write(str + " is " + check);
     }
     q11();
  </script>
</body>
</html>
```

Name:_____ Regd. Number:_____

**(Q12)**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>JS Methods</title>
</head>
<body>
  <script>
    function q12() {
      let text = "Hello JavaScript Welcome to SoA University";
      document.write("Original: " + text + "<br>");
      document.write("Index of 'Java': " + text.indexOf("Java") + "<br>");
      document.write("Last Index of 'a': " + text.lastIndexOf("a") + "<br>");
      document.write("Slice(0,5): " + text.slice(0, 5) + "<br>");
      document.write("Replace: " + text.replace("Hello", "Hi") + "<br>");
      document.write("ReplaceAll: " + text.replaceAll("a", "X") + "<br>");
    }
    q12();
  </script>

</body>

</html>
```