JavaScript Test Paper

Total Marks: 100

Level: Intermediate

Section A: Multiple Choice Questions (30 Marks)

Each question carries 3 marks.

1. What will the following code output?

```
let x = [10] + 1;
console.log(x);
```

   a) `[10,1]`
   b) `"101"`
   c) `[10]1`
   d) `NaN`

3. Which statement correctly creates a JavaScript function that returns the factorial of a number?
   a) `function factorial(n) { return n * factorial(n - 1); }`
   b) `function factorial(n) { return n <= 1 ? 1 : n * factorial(n - 1); }`
   c) `function factorial(n) { return factorial(n - 1); }`
   d) `function factorial(n) { if (n === 1) return n; }`
4. What is the output of the following code?

```
let obj = { a: 1, b: 2 };
console.log(Object.keys(obj).length);
```

   a) `1`
   b) `2`
   c) `undefined`
   d) `Error`

6. What does the `Array.prototype.slice()` method do?
   a) Modifies the original array
   b) Returns a shallow copy of a portion of the array
   c) Combines two arrays into one
   d) None of the above
7. What will this code log?

```
console.log("5" - 3);
```

a) `NaN`
b) `53`
c) `2`
d) `Error`

8. Which of the following is not a JavaScript primitive data type?
   a) Number
   b) Object
   c) Boolean
   d) Undefined
9. How do you remove the last element from an array in JavaScript?
   a) `array.pop()`
   b) `array.splice()`
   c) `array.shift()`
   d) `array.slice()`
10. What is the purpose of the `Promise.all()` method in JavaScript?
    a) Runs all promises sequentially
    b) Resolves all promises one by one
    c) Resolves when all promises are resolved
    d) Cancels all promises
11. What will this code log?

```
12.  const a = 5;
13.  a = 10;
     console.log(a);
```

    a) `10`
    b) `5`
    c) `Error`
    d) `undefined`

14. Which of the following methods is used to iterate over an object's properties?
    a) `Object.keys()`
    b) `Object.entries()`
    c) `for...in` loop
    d) All of the above

Section B: Answer the Following Questions (30 Marks)

Each question carries 5 marks.

1. What is the difference between synchronous and asynchronous JavaScript?
2. Explain the difference between `let`, `const`, and `var`.
3. What is the purpose of JavaScript's `this` keyword? Provide examples.
4. Write a short note on JavaScript closures.

5. What are template literals in JavaScript? How are they different from regular strings?
6. What is the difference between `map()`, `filter()`, and `reduce()` methods of an array?

Section C: Programs (40 Marks)

Each program carries 20 marks.

Program 1 (20 Marks)

Problem: Write a program to find the most frequently occurring element in an array.

Instructions:

1. Accept an array of numbers or strings as input.
2. Determine the element that occurs most frequently.
3. If there is a tie, return any one of the most frequent elements.

Example Input: `[1, 3, 2, 3, 4, 1, 3]`
Example Output: `3`

Program 2 (20 Marks)

Problem: Write a program to convert a given array of objects into a single object.

Instructions:

1. Accept an array of objects with `key` and `value` properties.
2. Combine them into a single object where each `key` becomes a property and `value` its corresponding value.

Example Input:

```
[
  { key: "a", value: 1 },
  { key: "b", value: 2 },
  { key: "c", value: 3 }
]
```

Example Output:

```
{ a: 1, b: 2, c: 3 }
```

End of Test Paper