

Max Marks: 50

Time: 120 min

Instructions:

1. Mention your name and roll no. on the question paper.
2. There are 11 questions. All questions are compulsory and the marks are mentioned next to the question.
3. Specify any assumptions and try answering to the best of your understanding.

1. What is microdata in HTML5? Use the properties from <https://www.schema.org> specified in the table below (without altering the output of html in browser) to add microdata to the following webpage. (2 + 4 marks)

```
<!DOCTYPE html>
<html>
<body>
<section>
<hgroup>
<h2>Modern Web Development</h2>
<h3>Understanding domains, technologies, and user experiences</h3>
</hgroup>
<p>This book is one of the best books on web development suitable for web
developers as well as students. It is authored by Dino Esposito. He is the author while
John Minsk is the copyright holder. The book is published by Microsoft Press and its first
edition came out in the year 2016. It consists of well over 489 pages and 10 chapters. The
project to publish this book started with production house team consisting of Devon
Musgrave, Steve Sagman and Marc Young. It did an incredible job and the book was out
well in time. </p>
</section>
</body>
</html>
```

| Book | | |
|----------------------|----------------|----------------------------------|
| Property | Expected Type | Description |
| <u>bookEdition</u> | <u>Text</u> | The edition of the book. |
| <u>numberOfPages</u> | <u>Integer</u> | The number of pages in the book. |
| CreativeWork | | |
| Property | Expected Type | Description |

| | | | |
|------------------------|--------------------------------------|----|--|
| <u>audience</u> | <u>Audience</u> | | An intended audience, i.e. a group for whom something was created. |
| <u>copyrightHolder</u> | <u>Organization</u> <u>Person</u> | or | The party holding the legal copyright to the CreativeWork. |
| <u>copyrightYear</u> | <u>Number</u> | | The year during which the claimed copyright for the CreativeWork was first asserted. |
| <u>creator</u> | <u>Organization</u> <u>Person</u> | or | The creator/author of this CreativeWork. This is the same as the Author property for CreativeWork. |
| <u>datePublished</u> | <u>Date</u> <u>DateTime</u> | or | Date of first broadcast/publication. |
| <u>publisher</u> | <u>Organization</u> <u>Person</u> | or | The publisher of the creative work. |

| Person | | |
|--------------------|---|---|
| Property | Expected Type | Description |
| <u>givenName</u> | <u>Text</u> | Given name. In the U.S., the first name of a Person. This can be used along with familyName instead of the name property. |
| <u>familyName</u> | <u>Text</u> | Family name. In the U.S., the last name of an Person. This can be used along with givenName instead of the name property. |
| <u>address</u> | <u>PostalAddress</u> <u>Text</u> | Physical address of the item. |
| <u>affiliation</u> | <u>Organization</u> | An organization that this person is affiliated with. For example, a school/university, a club, or a team. |
| <u>alumniOf</u> | <u>EducationalOrganization</u> <u>Organization</u> | An organization that the person is an alumni of. Inverse property: <u>alumni</u> . |

2. Given the following HTML body (7 marks)

```
<body>
  <nav>
    <a href="">Home</a>
    <a href="">About</a>
    <a href="">Contact us</a>
  </nav>
  <header>
    <h1>A Collection of the best recipes ever</h1>
  </header>
  
  <article id="recipe-list">
    <ul>
      <li>Holiday Cookies</li>
      <li>Lasagna</li>
```



```

    <li>Ants on a Log</li>
    <li>Kimchi Burrito</li>
  </ul>
</article>
<article id="recipe-area">
  <h2>Holiday Cookies</h2>
  <article id="ingredients">
    <ul>
      <li>flour</li>
      <li>sugar</li>
      <li>magic</li>
    </ul>
  </article>
  <p class="instruction">Combine all the ingredients.</p>
  <p class="instruction">Wish on a shooting star.</p>
  <p class="instruction">Profit.</p>
</article>
</body>

```

- A. write the CSS to fit the following styling requirements. (5 marks)
- height of the <nav> element is 50 pixels and background color is gray. All links should be placed horizontally evenly in the space available, background color of pink and padding of 1 rem.
 - The color of the text for all the headings except the one in the header should be #333fff.
 - Every element with the class instruction should have a border that is 2 pixels, dashed, and red.
 - The elements should be placed sticking to the page border
 - The image should be positioned in a way that there is an overlap of 50 pixels between the header height and the image height. The image should have a height of 100 pixels and should be placed at a distance of 50 pixels from the left.
- B. Categorize the elements in the above code into block level, inline and inline-block. (2 marks)
3. How does a closure function help in creating private methods in JavaScript? What is the scope chain in a closure function? Explain with an example. (4 marks)
4. Will the following Javascript code snippets execute without any error? Specify yes or no. If yes, what is the output printed on console. In case not, specify the reason. (6 marks)

i.

```

const a = 'bonus';
a = a + 'doubled';
console.log(a);

```

ii.

```

const y = [6,8,0];
y.push('ninety');
console.log(y);

```

| | |
|--|--|
| iii. //function call console.log(f(4)); //function definition function f(count, offset=1){ return count = count+offset; } | iv. let X=[1,2,3,4,5]; let [x1, x2] = X; console.log(x2); |
| v. function func(){ return new Promise(function (resolve, reject) { resolve(); }); } let promise =func(); promise .then(function() { console.log("Success 1"); }); promise .then(function() { console.log("Success 2"); }); | vi. function display(){ let x = 0; var str = '7'; console.log(str); while(x<3) { var str = 'India'; x+=1; } console.log(str); } display(); |

5. Attempt the following parts (2+3 marks)

- a) Write a single JavaScript function named findMax. When this function is called with findMax(x,y) where x and y are two numbers, it returns the higher value. If more than 2 arguments are passed, it should return the maximum value of all elements. Atleast 1 argument is passed to this function. Example function calls are as follows:

```
console.log(findMax(2,3)); //output: 3
console.log(findMax(2, 8, 7, 6)); //output: 8
```

- b) Consider the following array of objects.

```
let expense =[
  {name: 'groceries', cost: 5000},
  {name: 'travel', cost: 4000},
  {name: 'laundry', cost: 1000},
  {name: 'electricity', cost:2000 },
  {name: 'miscellaneous', cost:3000 }
];
```

Write Javascript code using higher order array method to:

- i. print the name of the job that incurs the expense higher than 2000 .

- ii. compute and print the total expenditure on the console
- iii. print the name of the job that incurs the maximum expense .

6. Consider the following code and generate the outline of the webpage using the HTML5 outlining algorithm. (4 marks)

```
<!DOCTYPE html>
<html>
<head>
  <title>My Webpage</title>
</head>
<body>
  <header>
    <h1>My Webpage</h1>
    <nav>
      <ul>
        <li><a href="#about">About</a></li>
        <li><a href="#services">Services</a></li>
        <li><a href="#contact">Contact</a></li>
      </ul>
    </nav>
  </header>
  <main>
    <section id="about">
      <h2>About</h2>
      <p>Lorem ipsum eget posuere massa vehicula id. Pellentesque eu lorem id magna bibendum pellentesque ac quis quam.</p>
    </section>
    <section id="services">
      <h2>Services</h2>
      <ul>
        <li>Web Design</li>
        <li>Graphic Design</li>
        <li>Search Engine Optimization</li>
      </ul>
    </section>
    <section id="contact">
      <h2>Contact</h2>
      <p>Get in touch with us:</p>
      <ul>
        <li>Email: info@example.com</li>
        <li>Phone: 555-1234</li>
        <li>Address: 123 Main St.</li>
      </ul>
    </section>
  </main>
  <footer>
    <p>Copyright © 2023 My Webpage</p>
  </footer>
</body>
</html>
```

7. Create a custom event in JavaScript named 'TaskCompleted' and dispatch it. Write the code for the event handler which should display on console, a numeric value called 'score' which is passed as an argument to the event. (4 marks)
8. What is prototypal inheritance and classical inheritance in JavaScript. Show the prototype chain in both cases. (3 marks)
9. For a React application do the following (6 marks):
 - i. Create a React function component List.js. This component accepts a prop called 'items'. The component should render an unordered list with each item as a list item.
 - ii. Create a React function component 'Button' named 'Order'. This should be displayed for each list only if the list contains atleast one item.
 - iii. Create a React function component called 'App' that displays two lists. List 1 consisting of electronic items: mobile charger, smartphone, earphone and laptop. Second list consisting of electrical goods: toaster, geyser, air conditioner and washing machine.
 - iv. Both the lists should have text color blue. You can create App.css or include inline styling.
10. What is the difference between synchronous and asynchronous programming? What is the role of event loops in asynchronous programming? How do you handle multiple asynchronous tasks that need to be executed in a specific order? (1 + 2 + 2 marks)