Q.1 What is a Media Query in CSS, and what is its purpose?

A media query in CSS is a technique that allows you to apply different styles to a web page based on various characteristics of the device or media that is being used to view the page. It allows you to create responsive designs that adapt to different screen sizes, resolutions, device capabilities, and other factors.

The purpose of media queries is to make your website or web application look and function appropriately across a wide range of devices. By using media queries, you can define specific CSS rules that will be applied only when certain conditions are met, such as the screen width or height, the device orientation, the presence of specific features (e.g., touch screen), and more.

Q.2 How do you define a media query in CSS?

To define a media query in CSS, you use the `@media` rule followed by one or more media features and their corresponding values. Here's the basic syntax:

```css
@media media-type and (media-feature: value) {
  /* CSS rules to be applied when the media query matches */
}
```

The `media-type` can be `all`, `screen`, `print`, `speech`, or a specific media device type. The `and` keyword is used to combine multiple media features within a media query.

For example, the following media query targets screens with a maximum width of 600 pixels:

```css
@media screen and (max-width: 600px) {
  /* CSS rules for screens up to 600 pixels wide */
}
```

The CSS rules within the media query block will only be applied when the conditions specified by the media query are met.

Q.3 Explain the concept of Breakpoints in Responsive Web Design and How They are used in Media Queries.

Breakpoints in responsive web design refer to specific screen widths at which the layout of a website or web application adapts to provide an optimal viewing experience. These breakpoints are defined points where the design "breaks" and requires a different set of CSS rules to accommodate the changing screen size.

Media queries are commonly used to define breakpoints in responsive web design. By using media queries, you can specify different CSS rules for different screen sizes or ranges of screen sizes. For example, you can define a breakpoint for mobile devices, tablets, and desktops.

Here's an example of using breakpoints with media queries:

```css
/* CSS rules for screens up to 600 pixels wide (mobile) */
@media screen and (max-width: 600px) {
  /* CSS rules for mobile devices */
}

/* CSS rules for screens between 601 and 1024 pixels wide (tablet) */
@media screen and (min-width: 601px) and (max-width: 1024px) {
  /* CSS rules for tablets */
}

/* CSS rules for screens larger than 1024 pixels wide (desktop) */
@media screen and (min-width: 1025px) {
  /* CSS rules for desktops */
}
```

In the above example, different CSS rules are applied based on the screen width. When the screen width is 600 pixels or less, the mobile styles are applied. For screen widths between 601 and 1024 pixels, the tablet styles are applied. And for screen widths larger than 1024 pixels, the desktop styles are applied. These breakpoints allow the design to adapt and provide an optimal user experience across different devices.

Q.4What is the purpose of using Media Queries for Print Media?

Media queries for print media allow you to define specific styles that will be applied when a web page is printed. This enables you to create printer-friendly versions of your web content, optimizing the layout and appearance for the printed output.

By using media queries for print media, you can hide or modify certain elements, adjust font sizes and colors, control page breaks, and apply other print-specific styles. This helps in ensuring that the printed version of your web page is well-formatted and readable, without unnecessary clutter or layout issues.

Here's an example of using a media query for print media:

```css
```

```
@media print {
  /* CSS rules for print styles */
  body {
    font-size: 12pt;
  }

  .print-hide {
    display: none;
  }
}
```

In the above example, the CSS rules within the `@media print` media query will be applied only when the web page is being printed. In this case, the font size of the body is set to 12 points, and elements with the class `.print-hide` will be hidden in the printed version.

Q.5 What is the purpose of the `orientation` media feature?

The `orientation` media feature is used to target the orientation of the device or viewport, specifically whether it is in a portrait or landscape mode. It allows you to apply different styles based on the device's orientation.

The `orientation` media feature has two possible values: `portrait` and `landscape`. The `portrait` value represents a vertical orientation (taller than it is wide), while the `landscape` value represents a horizontal orientation (wider than it is tall).

Here's an example of using the `orientation` media feature:

```css
@media screen and (orientation: landscape) {
  /* CSS rules for landscape orientation */
}

@media screen and (orientation: portrait) {
  /* CSS rules for portrait orientation */
}
```

In the above example, different CSS rules can be defined for landscape and portrait orientations. For instance, you might want to adjust the layout or font sizes based on the available screen space in each orientation.

By utilizing the `orientation` media feature, you can create responsive designs that adapt to different device orientations, providing an optimal user experience for both portrait and landscape modes.