**🧠 CSS MASTER GUIDE – Web Lab Exam Notes**

**🎯 1. CSS GRID – Layout Master**

**🔹 Basic Grid Setup**

css

Copy code

.container {

display: grid;

grid-template-columns: repeat(3, 1fr); /\* 3 equal columns \*/

grid-template-rows: auto;

gap: 20px; /\* space between rows/columns \*/

}

**🔹 Grid Terminology**

| **Term** | **Meaning** |
| --- | --- |
| grid-template-columns | Defines number and size of columns |
| grid-template-rows | Defines number and size of rows |
| fr | Fractional unit (e.g., 1fr means 1 part of remaining space) |
| gap | Space between rows & columns |
| place-items, justify-items, align-items | Align content inside cells |

**🔹 Grid Item Placement**

css

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.item {

grid-column: 1 / 3; /\* Span from column 1 to 2 \*/

grid-row: 2 / 4; /\* Span from row 2 to 3 \*/

}

**🔹 Advanced Grid Features**

css

Copy code

.container {

grid-template-areas:

"header header"

"sidebar main"

"footer footer";

}

.header { grid-area: header; }

.sidebar { grid-area: sidebar; }

.main { grid-area: main; }

.footer { grid-area: footer; }

**📦 2. FLEXBOX – 1D Layout (Row/Column)**

**🔹 Basic Flex Container**

css

Copy code

.container {

display: flex;

flex-direction: row; /\* row | column \*/

justify-content: center; /\* start | end | center | space-between | space-around \*/

align-items: center; /\* stretch | flex-start | center | baseline \*/

gap: 10px;

}

**🔹 Flex Items**

css

Copy code

.item {

flex-grow: 1; /\* grow relative to others \*/

flex-shrink: 1; /\* shrink if needed \*/

flex-basis: 100px;/\* default size \*/

align-self: center; /\* overrides container alignment \*/

}

**🔹 Shorthand**

css

Copy code

.item {

flex: 1 0 150px; /\* grow | shrink | basis \*/

}

**🔄 3. TRANSITIONS**

**🔹 Basic Transition**

css

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.button {

transition: background-color 0.3s ease;

}

.button:hover {

background-color: red;

}

**🔹 Multiple Properties**

css

Copy code

.box {

transition: transform 0.5s ease-in-out, opacity 0.5s;

}

**🎥 4. ANIMATIONS + KEYFRAMES**

**🔹 Keyframe Syntax**

css

Copy code

@keyframes slideIn {

0% { transform: translateX(-100px); opacity: 0; }

100% { transform: translateX(0); opacity: 1; }

}

**🔹 Apply Animation**

css

Copy code

.box {

animation: slideIn 1s ease-out forwards;

}

| **Property** | **Description** |
| --- | --- |
| animation-name | Which keyframes to use |
| animation-duration | How long it runs |
| animation-iteration-count | How many times |
| animation-delay | Wait before starting |
| animation-direction | reverse |

**🧊 5. 3D TRANSFORMS**

**🔹 Perspective**

css

Copy code

.container {

perspective: 1000px;

}

**🔹 Transform 3D**

css

Copy code

.box {

transform: rotateY(180deg) translateZ(50px) scale3d(1, 1, 1);

transition: transform 0.5s;

}

**🔹 Common 3D Transform Functions**

| **Function** | **Effect** |
| --- | --- |
| rotateX(45deg) | Rotates on X axis |
| rotateY(45deg) | Rotates on Y axis |
| translateZ(100px) | Moves object forward |
| scale3d(x,y,z) | Scales in 3D |

**🎯 6. ADVANCED CSS SELECTORS**

| **Selector** | **Description** | **Example** |
| --- | --- | --- |
| \* | Universal | \* { margin: 0; } |
| div > p | Direct child | only immediate p inside div |
| div + p | Adjacent sibling | first p after div |
| [type="text"] | Attribute selector | inputs of type text |
| :nth-child(2n) | Even elements | every second child |
| ::before, ::after | Pseudo-elements | add content before/after element |
| :hover, :focus, :checked | Pseudo-classes | interactive states |

**🧩 7. CUSTOM PROPERTIES (CSS VARIABLES)**

css

Copy code

:root {

--main-color: #3498db;

--spacing: 10px;

}

.box {

color: var(--main-color);

padding: var(--spacing);

}

**⚡ 8. MEDIA QUERIES (Responsive Design)**

css

Copy code

@media screen and (max-width: 768px) {

.container {

flex-direction: column;

}

}

**💡 9. COMMON SNIPPETS TO REMEMBER**

**🔹 Center a div (Flexbox)**

css

Copy code

.center {

display: flex;

justify-content: center;

align-items: center;

}

**🔹 Perfect Grid Layout**

css

Copy code

.grid-3 {

display: grid;

grid-template-columns: repeat(3, 1fr);

gap: 1rem;

}

**🔹 Button with animation**

css

Copy code

.button {

transition: all 0.3s ease;

}

.button:hover {

transform: scale(1.1);

background-color: var(--main-color);

}