TOP 30 MOST IMPORTANT QUESTIONS

Web Computing - Mumbai University

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Question Bank Analysis

Based on comprehensive analysis of 6 previous year question papers (2022-2025), the following 30 questions represent the most frequently asked and important topics for Web Computing examination.

1. Express.js [10 Marks]

Question: What is Express.js? Explain the features and advantages of using Express. What are the different parts of the Express server file?

Topic Coverage: Express.js framework, features, advantages, server file structure

2. JavaScript Form Validation [10 Marks]

Question: Write JavaScript code to validate Username, Password and Email with following conditions:

- Username and Password should not be blank
- Minimum length of password = 8 with uppercase, lowercase and number
- Email should have @ and . character

Topic Coverage: Form validation, input validation, JavaScript programming

3. React State and Props [10 Marks]

Question: Explain the concept of state and props in React. How do they differ, and how are they used in components? Illustrate with practical examples.

Topic Coverage: React state management, props, component communication

4. React Hooks - useState & useEffect [10 Marks]

Question: Explain the concept of React Hooks. What are the rules of using Hooks? Provide examples of useState and useEffect hooks.

Topic Coverage: React Hooks, useState, useEffect, functional components

5. Node.js Architecture [10 Marks]

Question: Explain the architecture of Node.js with a neat diagram. Explain its event-driven programming model.

Topic Coverage: Node.js architecture, event-driven model, system design

6. React Components [10 Marks]

Question: What are components in React? Explain class components and functional components. Create a class component 'Car' in React and demonstrate its use.

Topic Coverage: React components, class vs functional components, component creation

7. Node.js File Operations [10 Marks]

Question: Write a Node.js program to create a simple text file with data provided by the user. Explain asynchronous file reading in Node.js.

Topic Coverage: File I/O operations, asynchronous programming, Node.js fs module

8. MVC, FLUX and Redux [10 Marks]

Question: Compare and contrast MVC, FLUX, and Redux architectures. Explain their use in modern web applications.

Topic Coverage: Architectural patterns, state management, design patterns

9. Event Loop in Node.js [10 Marks]

Question: Explain the working of the event loop along with different phases of Node.js with a neat diagram. How does it handle asynchronous operations?

Topic Coverage: Event loop, asynchronous processing, Node.js internals

10. DNS Working [05 Marks]

Question: What is DNS? Explain the working of DNS with suitable diagrams. Clearly explain all the steps involved in DNS resolution.

Topic Coverage: Domain Name System, DNS resolution, networking fundamentals

11. Document Object Model (DOM) [10 Marks]

Question: Explain the Document Object Model (DOM) and its levels. Write a JavaScript program that accepts two numbers as input and displays their sum.

Topic Coverage: DOM structure, DOM manipulation, JavaScript programming

12. HTTP Protocol [05 Marks]

Question: What is HTTP? Explain its working along with request and response examples. Explain REST APIs and HTTP GET/POST requests.

Topic Coverage: HTTP protocol, request/response cycle, REST APIs

13. React JSX [05 Marks]

Question: What is React JSX? Explain React JSX with suitable examples such as rendering the greeting message 'Hello! Welcome to React'.

Topic Coverage: JSX syntax, React rendering, component templates

14. Node.js Callbacks [05 Marks]

Question: What is a callback in Node.js? Explain with suitable examples. Discuss callback functions and best practices to manage them effectively.

Topic Coverage: Callback functions, asynchronous patterns, callback management

15. XML vs JSON [05 Marks]

Question: Differentiate between JSON and XML. Discuss their use cases and advantages in web development.

Topic Coverage: Data formats, XML, JSON, web data interchange

16. React Router [10 Marks]

Question: Explain how React Router can be used to create a single-page application (SPA). Demonstrate the routing of web pages using React Router.

Topic Coverage: React Router, SPA routing, navigation management

17. Express Server with Routing [10 Marks]

Question: Write a Node.js program using Express to create a basic server that handles GET and POST requests, implements basic routing, and includes error handling.

Topic Coverage: Express routing, HTTP methods, error handling, server creation

18. React Component Lifecycle [10 Marks]

Question: Explain React Component Lifecycle with suitable diagram. When are the React components re-rendered?

Topic Coverage: Component lifecycle methods, re-rendering, lifecycle phases

19. Single Page Application [05 Marks]

Question: What is a single page application (SPA)? Explain its advantages and how React facilitates building SPAs.

Topic Coverage: SPA architecture, advantages, React SPA development

20. Node.js Modules [05 Marks]

Question: Explain different types of Node.js modules. What are the modules that provide core functionality?

Topic Coverage: Module system, core modules, custom modules, exports/imports

21. ES5 vs ES6 [10 Marks]

Question: Differentiate between ES5 and ES6. Explain the concepts of Arrow Functions, classes and inheritance in JavaScript ES6 with examples.

Topic Coverage: JavaScript versions, ES6 features, modern JavaScript syntax

22. JavaScript Cookies [05 Marks]

Question: Write a JavaScript code to set a cookie on the user's computer. Explain cookies concept in Express.js with example.

Topic Coverage: Cookie management, session handling, Express middleware

23. 3-Tier Web Architecture [05 Marks]

Question: Draw and illustrate 3-tier web architecture. Explain each tier and its role in web applications.

Topic Coverage: Web architecture, presentation layer, business logic, data layer

24. Promises and Async/Await [10 Marks]

Question: Discuss the asynchronous nature of JavaScript. Explain how Node.js handles asynchronous operations using callbacks, Promises, and async/await with code examples.

Topic Coverage: Asynchronous programming, Promises, async/await, callback patterns

25. JavaScript DOM Manipulation [05 Marks]

Question: Write JavaScript code to change the background color of a web page (automatically every 5 seconds OR using buttons). Also, write code for displaying a digital clock.

Topic Coverage: DOM manipulation, event handling, timers, dynamic styling

26. React useEffect Hook [10 Marks]

Question: Explain how React's useEffect hook can be used to perform side effects in functional components. Provide an example where useEffect is used to fetch data from an API.

Topic Coverage: useEffect hook, side effects, API integration, lifecycle in functional components

27. Redux State Management [10 Marks]

Question: Describe how to manage state in a React application using Redux. Include an example to illustrate state management in a complex application.

Topic Coverage: Redux, state management, actions, reducers, store

28. React Features [05 Marks]

Question: What is React.js? Discuss different features and advantages of React.js. Why is React popular for modern web development?

Topic Coverage: React fundamentals, virtual DOM, component-based architecture, advantages

29. RESTful API [05 Marks]

Question: What are the criteria for an API to be a RESTful API? Describe how REST APIs function in web development.

Topic Coverage: REST principles, API design, HTTP methods, stateless architecture

30. Complex Form Validation [10 Marks]

Question: Write code to process an online form (Alumni/Signup) with validations:

- All fields must be filled
- Valid email (@ and .)
- Age validation (18-60 or DOB >=22 years)
- Username alphanumeric (5-15 characters)

Topic Coverage: Complex validation, form processing, regular expressions, input sanitization

Preparation Strategy

High Priority Topics (Appeared 6+ times):

1. Express.js
2. JavaScript Validation
3. State and Props in React
4. React Hooks
5. React Components
6. MVC/FLUX/Redux
7. Event Loop in Node.js
8. File Operations in Node.js

Medium Priority Topics (Appeared 3-5 times):

1. HTTP/REST APIs
2. DOM Manipulation
3. XML vs JSON
4. Callbacks in Node.js
5. DNS Working
6. Node.js Architecture
7. React Router
8. Cookies

Important But Less Frequent:

1. JSX
2. 3-Tier Architecture
3. Promises/Async-Await
4. React Lifecycle

Exam Pattern Summary

- **Total Marks:** 80
- **Duration:** 3 Hours
- **Question Pattern:**
  - Q1: Compulsory (4 sub-questions × 5 marks = 20 marks)
  - Q2-Q6: Attempt any 3 out of 5 (3 questions × 20 marks = 60 marks)
  - Each question Q2-Q6 has 2 sub-parts of 10 marks each

Note: Practice writing code for JavaScript validation, React components, Node.js server creation, and Express applications as these are frequently asked with "write code" instructions.