

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5724

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Unique Paper Code : 2344000021

Name of the Paper : Internet Technologies: Web App Design and Development

Name of the Course : Common Prog. Group – Generic Elective

Semester : VI

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **all** questions from **Section-A**.
3. Attempt any **four** questions from **Section-B**.
4. Attempt all parts of a question together.

Section A

- Q1. a) What is a React Element? How is it different from a React Component? 3
- b) Explain the role of the Virtual DOM in React? 3
- c) Describe the role of Arrow functions in ES6 with syntax. 3
- d) Write any *three* characteristics of REST API. 3
- e) What are REST APIs? Mention any *two* characteristics of REST architecture. 3
- f) List any *three* major features of Angular. 3
- g) What is WRML? Mention its *two* advantages. 3
- h) What is Caching in REST APIs? Write any *two* HTTP headers used for caching with examples. 3

P.T.O.

- i) Differentiate between: 2 * 3
- i. One-way data binding and two-way data binding in Angular.
 - ii. JSON and XML

Section B

- Q2. a) How can you pass a React Element as a JSX prop? Explain with the help of a code snippet. 5
- b) What is the purpose of Default Props, and how are they defined? 5
- c) What are forms in React? How do they differ from traditional HTML forms? 5
- Q3. a) "State is isolated and private." Comment on this statement. 5
- b) Write an example of a nested JSON object and show how to access inner properties. 5
- c) Explain AngularJS Expressions. How are expressions used for displaying dynamic data in AngularJS? Explain with the help of an example. 5
- Q4. a) Differentiate between REST API and RESTful API. 5
- b) Define the following REST resource archetypes: 5
- i. Document
 - ii. Collection
- c) The following URIs are given for a Student Management System. Rewrite them as correct RESTful URIs with appropriate HTTP methods. 5
- i. `/getAllStudents`
 - ii. `/createStudentRecord`
 - iii. `/deleteStudent?id=25`
 - iv. `/updateStudentDetails/25`
 - v. `/fetchStudentByName?name=Rahul`
- Q5. a) Design a JSON Schema to validate an employee record that it must contain the following required fields: name (string), employee ID (integer), email (string), and department (string). 5

- b) Write a React program to implement routing for navigating between different pages in an application using React Router. Create at least two components/pages and provide navigation links to switch between them. 5
- c) Write a React program to create a component that changes the background color of a div when the mouse hovers over it. 5
- Q6. a) Explain the purpose of the following component configuration options in Angular: 5
- i. selector
 - ii. templateUrl
- b) Write an Angular application to display a list of items using an array and the `*ngFor` directive. Create a component to store the items and render them in the template using data binding. 5
- c) Write an Angular component that demonstrates the use of the following built-in pipes on a single page: 5
- i. uppercase
 - ii. lowercase
 - iii. date
 - iv. currency
 - v. percent
- Q7. a) Create a React functional component named `Counter` that demonstrates the use of `props` and `useState()` hook. The component should accept an initial value as a prop, display the current count, and provide buttons to increment and decrement the counter value. Also, render the component inside the main `App` component with a given initial value. 5
- b) Write an Angular application to: 5
- i. Create a component named `AppComponent`.
 - ii. Declare class properties such as `title` and `message`.
 - iii. Use the constructor to initialize these variables with default values.
 - iv. Display the values of these variables in the component template using interpolation.

- c) Explain the concept of interpolation in Angular. Discuss its syntax. Also, describe how interpolation is used to display dynamic data in Angular templates with the help of a code snippet. 5