

(Please write your Exam Roll No.)

Exam Roll No.-----

# END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY 2024

**Paper Code: FSD-322T**

**Subject: Web Development using Mern Stack**

**Time:3 hours**

**Maximum Marks:75**

**Note: Attempt any five questions including Q.No 1 which is compulsory. Select one question from each unit. Assume missing data, if any.**

- Q1 Attempt all the questions. [3\*5=15]
- (a) Explain the three-tier architecture of Mern Stack with diagram.
  - (b) Differentiate between: Shadow Dom and Virtual Dom.
  - (c) Describe the building blocks of React?
  - (d) What is meant by “Callback” and “Callback Hell” in Node JS?
  - (e) How to explain closures in JavaScript and when to use it?

## UNIT-1

- Q2 (a) In How many ways an HTML element can be accessed in JavaScript code? What is the ‘this’ keyword in JavaScript? [5]
- (b) Discuss the different CSS link states? Can elements be overlapped in CSS. Justify this. [5]
- (c) Differentiate between: [2\*2.5=5]
- (i) Block elements and inline elements
  - (ii) <em> tag and <i> tag
- Q3 (a) How to handle JavaScript Events in HTML? Explain with example. [7]
- (b) Write short notes on (any two): [2\*4=8]
- (i) Call Method( ) and Apply Method( )
  - (ii) CSS Box Model
  - (iii) Document Trees

## UNIT-2

- Q4 (a) Explain the components in React JS. Write the differences between class and functional components with example? [8]
- (b) Define React Hooks. Demonstrate the useState hook and useEffect hook in react? [7]
- Q5 (a) Explain State and Props in React JS. Give an example to update the state of component. [7]
- (b) Describe in brief (any two): [2\*4=8]

- (i) React Router
- (ii) Redux
- (iii) Unit Testing

### UNIT-3

- Q6 (a) Explain the significance of Node.js in backend development. How Node.js differs from traditional server-side technologies. [5]
- (b) Illustrate the process of handling HTTP requests and responses using Express.js. [5]
- (c) Explain the Node.js event loop mechanism. How does it help in handling asynchronous operations efficiently? [5]
- Q7 (a) Discuss the concept of middleware in Express.js. Give two examples of middleware functions and write their purposes. [7]
- (b) Give brief description on following: [2\*4=8]
- (i) Streams in Node JS
  - (ii) Express.js Scaffolding

### UNIT-4

- Q8 (a) Write the features of MongoDB. How does MongoDB differ from traditional relational databases? [7]
- (b) Perform with code (any two): [2\*4=8]
- (i) Add data in MongoDB?
  - (ii) Delete a Document?
  - (iii) Update a Document?
- Q9 (a) Describe the process of sharding in MongoDB. How does MongoDB ensure high availability? [7]
- (b) Explain with code (any two): [2\*4=8]
- (i) Document in MongoDB
  - (ii) Collection in MongoDB
  - (iii) Databases in MongoDB