

## N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

## END-OF-SEMESTER EXAMINATIONS : MAY 2025

BSC CS WITH DA-SF

MAXIMUM MARKS: 50

SEMESTER-VI

TIME : 3 HOURS

## PART - III

## 22UDA620 – FULL STACK DEVELOPMENT

SECTION – A

(10 X 1 = 10 MARK

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. Choose the correct statement that highlights the importance of Full Stack Development \_\_\_\_\_.
  - a. It limits developers to working on a single technology stack
  - b. It enables developers to manage the entire development process independently
  - c. It reduces the need for collaboration in software development
  - d. It focuses only on user interface design
2. Which of the following is used as the front-end library in the MERN stack?
  - a. React
  - b. Vue.js
  - c. Angular
  - d. jQuery
3. What is the purpose of the render() method in a React class component?
  - a. To update the state of the component
  - b. To return the JSX that should be displayed on the screen
  - c. To handle component lifecycle events
  - d. To define the initial state of the component
4. What does Node.js use to handle asynchronous operations?
  - a. Callbacks
  - b. Classes
  - c. Loops
  - d. Synchronous functions
5. Recall the command used to start the mongo shell \_\_\_\_\_.
  - a. start mongo
  - b. mongo
  - c. mongodb
  - d. mongo start

## ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define the purpose of a package manager in front-end development.
7. What is role of the observe() method in the Mutation Observer API?
8. Why composing components is beneficial in Full Stack Development?
9. Differentiate between Serving Static resources and Dynamic content in a web application.
10. Why schema initialization is a critical step in Full Stack Development?

(CONTD .... 2)

**SECTION – B** **(5 X 3 = 15 MARKS)**

**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)**

11. a) Apply the concept of Full Stack Development to explain how it can address the challenges faced by startups in building a web application within a limited budget and time frame. **(OR)**
- b) Compare the use of Postman and cURL as tools for testing backend APIs.
- 12.a) Apply your knowledge of the DOM tree to explain how you would dynamically change the text content of a <div> element with the ID output to “Hello, World!” using JavaScript. Provide the code snippet and briefly describe the process. **(OR)**
- b) Solve the problem of managing state in a MERN stack application
- 13.a) Compare JSX with traditional HTML in terms of syntax and functionality. **(OR)**
- b) Compare the two approaches for communicating from child to parent in React: using callback props and using context API.
- 14.a) Apply the steps to configure a static resource folder in an Express.js application. Provide the necessary code snippet and explain its purpose. **(OR)**
- b) A server running a Node.js application crashes frequently due to memory leaks. Propose a solution to automatically restart the server when it crashes.
- 15.a) Compare the use of insertOne() and insertMany() methods in the MongoDB Node.js driver. Provide an example scenario. **(OR)**
- b) Explain how you would ensure consistency and handle conflicts during replication.

**SECTION – C** **(5 X 5 = 25 MARKS)**

**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4 (Or) K5)**

16. a) Analyze the differences between Relational and Non-Relational Databases. **(OR)**
- b) Evaluate the advantages and disadvantages of using a Client/Server architecture over a Peer-to-peer (P2P) architecture in a distributed system. Justify your answer with relevant examples.
17. a) Analyze the execution order of the following code snippet and explain why the output is in a specific sequence.  

```
console.log('Start');
setTimeout(() => console.log('Timeout'), 0);
Promise.resolve().then(() => console.log('Promise'));
console.log('End');
```

**(OR)**
- b) Node.js provides several properties related to the process object, such as process.env, process.argv, and process.pid. Analyze the significance of each of these properties in the context of a full-stack application.
18. a) Evaluate the advantages and disadvantages of using arrow functions in React functional components compared to traditional function declarations. **(OR)**
- b) Analyze how React's component-based architecture enhances the development of SaaS applications. Provide example.
- 19.a) Analyze the advantages and limitations of using the Node.js File System module for handling file operations in web applications. **(OR)**
- b) Determine the best practices for handling asynchronous errors in Node.js applications.
- 20.a) Evaluate the effectiveness of different read operations (find(), findOne(), and aggregation) in MongoDB. **(OR)**
- b) Analyze the impact of improper data validation in CRUD operations on a web application.

\*\*\*\*\*