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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VII - THEORY EXAMINATION (2024 - 2025)

Subject: Web Development using MERN Stack with DevOps

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

20

1. Attempt all parts:-

- 1-a. Choose which command is used to initialize a new Node.js project with NPM. (CO1, K1) 1
- (a) npm start
- (b) npm init
- (c) npm install
- (d) npm create
- 1-b. Select which of the following is not a valid NPM command. (CO1, K1) 1
- (a) npm install
- (b) npm build
- (c) npm start
- (d) npm create
- 1-c. Google's Material Design is .....(CO2, K2) 1
- (a) A framework for creating 3D animations
- (b) A design language for creating visually appealing and consistent user interfaces
- (c) A programming language developed by Google
- (d) A game development engine
- 1-d. Select the library that implements Material Design principles for React applications.(CO2, K2) 1
- (a) Materialize CSS

- (b) Bootstrap
  - (c) Material-UI
  - (d) Semantic UI
- 1-e. Npm Stands for.....(CO3, K2) 1
- (a) Node Project Manager
  - (b) Node Package Manager
  - (c) New Project Manager
  - (d) New Package Manager
- 1-f. Which of the following is not a valid language for Node.js?(CO3, K1) 1
- (a) JavaScript
  - (b) Java
  - (c) C
  - (d) C++
- 1-g. What are the key Components of Devops.(CO4, K1) 1
- (a) Continuous Testing
  - (b) Continuous Integration
  - (c) Continuous Delivery & Monitoring
  - (d) All of the above
- 1-h. Which of the following is not a part of DevOps lifecycle\_\_\_\_\_. (CO4, K2) 1
- (a) Operating
  - (b) Plan
  - (c) Build
  - (d) Code
- 1-i. In a GitHub workflow, what is the purpose of a pull request? (CO5, K2) 1
- (a) To merge branches automatically
  - (b) To request changes in the codebase
  - (c) To deploy the application
  - (d) To initialize a new repository
- 1-j. Which Git command is used to create a new branch in a repository? (CO5, K2) 1
- (a) git commit
  - (b) git branch
  - (c) git merge
  - (d) git pull
2. Attempt all parts:-
- 2.a. Define React state and props. (CO1, K1) 2
- 2.b. Define Material UI. (CO2, K2) 2
- 2.c. Explain some template engines.(CO3, K2) 2

- 2.d. Why is collaboration essential in DevOps.(CO4, K2) 2
- 2.e. Explain role of version control in web development using the MERN stack in brief.(CO5, K2) 2

**SECTION-B** 30

3. Answer any five of the following:-

- 3-a. Discuss all the different phases of React component's lifecycle. (CO1, K2) 6
- 3-b. Explain the lifecycle methods of React components in detail. (CO1, K2) 6
- 3-c. Name some common components available in Material-UI, and how can they be used.(CO2, K2) 6
- 3-d. Indicate the significance of Material-UI's Button and Text Field Components, in the App bar component of Material-UI. (CO2, K3) 6
- 3.e. Illustrate Node.js and how does it differ from traditional JavaScript running in a web browser(CO3, K3) 6
- 3.f. Name some popular DevOps tools and briefly explain their purposes.(CO4, K2) 6
- 3.g. Explain the difference between Git and traditional version control systems.(CO5, K3) 6

**SECTION-C** 50

4. Answer any one of the following:-

- 4-a. Define JSX in React? How does JSX differ from regular HTML. (CO1, K1) 10
- 4-b. Explain the difference between Stateful and stateless components in React. Provide examples of scenarios where you would choose one over the other. (CO1, K3) 10

5. Answer any one of the following:-

- 5-a. Explain how integrated caching can help improve the performance of a web application with a large user base.(CO2, K3) 10
- 5-b. Describe how a microservices architecture contributes to better scalability in modern web applications.(CO2, K2) 10

6. Answer any one of the following:-

- 6-a. Explain the use of cookies in session management.(CO3, K2) 10
- 6-b. Distinguish the main components of HTTP request and how are they structured? (CO3, K2) 10

7. Answer any one of the following:-

- 7-a. Describe how collaboration and communication are fundamental DevOps principles. Provide real-world examples of their importance.(CO4, K2) 10
- 7-b. Outline the principles and best practices of Release Management in DevOps, and its importance in ensuring reliable software releases.(CO4, K3) 10

8. Answer any one of the following:-

- 8-a. Define the steps to trigger a Jenkins job automatically when changes are pushed to a Git repository. (CO5, K2) 10

- 8-b. Describe the purpose of Docker in the context of MERN stack development with DevOps. (CO5, K2) 10

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