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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 (2023-2024)

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. State the use of create-react-app command. (CO1) 1
- (a) Creates a new React project
 - (b) Installs React as a dependency in an existing project
 - (c) Initializes a new Node.js project
 - (d) Creates a new HTML file for a React app
- 1-b. Key advantage of using functional components in React are _____. (CO1) 1
- (a) They have better performance compared to class components
 - (b) They can manage component state more effectively
 - (c) hey can access the DOM directly
 - (d) They are easier to debug
- 1-c. Select the type of navigation elements that can be included in an AppBar. (CO2) 1
- (a) Social media icons
 - (b) Links to different sections of the application

- (c) Image gallery
- (d) Video gallery
- 1-d. What happens to a transaction if any part of it fails to execute successfully. (CO2) 1
 - (a) The entire transaction is rolled back, and the changes are undone.
 - (b) The transaction is committed, and the changes are saved to the database.
 - (c) The transaction is paused until the issue is resolved.
 - (d) The transaction is automatically retried.
- 1-e. Which HTTP status code is typically used to indicate a successful request for a static resource? (CO3) 1
 - (a) 200 (OK)
 - (b) 404 (Not Found)
 - (c) 500 (Internal Server Error)
 - (d) 302 (Not found)
- 1-f. What are static resources in web development? (CO3) 1
 - (a) Dynamic content generated by the server
 - (b) Fixed layout and design elements like images, CSS, and JavaScript
 - (c) User-generated content like comments and posts
 - (d) Database records
- 1-g. Which of the following is not a part of DevOps lifecycle _____. (CO4) 1
 - (a) Operating
 - (b) Plan
 - (c) Build
 - (d) Code
- 1-h. Which phase in the DevOps lifecycle focuses on creating and modifying code? (CO4) 1
 - (a) Plan
 - (b) Build
 - (c) Test
 - (d) Deploy
- 1-i. Primary role of GitHub in MERN stack development with DevOps is: (CO5) 1
 - (a) Front-end development
 - (b) Version control and collaboration

(c) Database management

(d) Server configuration

1-j. What is the role of Docker in MERN stack development, and how is it related to GitHub? (CO5) 1

(a) Docker is used for version control.

(b) Docker is a database management tool.

(c) Docker enables containerization, and GitHub Container Registry can store Docker images.

(d) Docker is used for static website hosting.

2. Attempt all parts:-

2.a. Define React state and props. (CO1) 2

2.b. List two advantages of Material UI. (CO2) 2

2.c. What is Mongoose Module? (CO3) 2

2.d. Name the stages in the DevOps lifecycle. (CO4) 2

2.e. What is the purpose of version control in software development, and how does Git fulfill this role? (CO5) 2

SECTION B

30

3. Answer any five of the following:-

3-a. Define Stateless component in React, and how does it differ from a Stateful component? Provide examples to illustrate the differences. (CO1) 6

3-b. Define React Router, and why is it used in React applications. (CO1) 6

3-c. Describe the advantages and disadvantages of using a dynamic schema in a database. (CO2) 6

3-d. Explain the advantages and disadvantages of statement-based replication and binary replication in database systems.(CO2) 6

3.e. Explain the role of the Model, View and Controller components in the MVC pattern? (CO3) 6

3.f. Explain the Scrum methodology and its process flow.(CO4) 6

3.g. Explain the role of Jenkins files in defining pipelines. (CO5) 6

SECTION C

50

4. Answer any one of the following:-

4-a. Define React components. Differentiate between functional components and class components in React. (CO1) 10

- 4-b. Explain the difference between local and global NPM packages. How can you install a package globally using NPM. (CO1) 10

5. Answer any one of the following:-

- 5-a. Explain the difference between static and dynamic load-balancing approaches.(CO2) 10
- 5-b. How can you create a basic Navbar in HTML and CSS? (CO2) 10

6. Answer any one of the following:-

- 6-a. What are the main components of HTTP request and how are they structured? (CO3) 10
- 6-b. Explain the Significance of Template Engine and describe the key features of Express Framework? (CO3) 10

7. Answer any one of the following:-

- 7-a. Compare and contrast two different SDLC models, for example, Waterfall and Agile, and discuss their advantages and disadvantages. (CO4) 10
- 7-b. Discuss the various stages in the DevOps lifecycle and explain the significance of each stage in the software development process. (CO4) 10

8. Answer any one of the following:-

- 8-a. Define the purpose of Docker in the context of MERN stack development with DevOps. (CO5) 10
- 8-b. How do you deploy a MERN stack application on a Kubernetes cluster? (CO5) 10