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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

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.   Framework is a_____. (CO1, K1)   1

    (a)   A programming language

    (b)   A collection of libraries and tools

    (c)   A database management system

    (d)   A hardware component

1-b.   Purpose of the public directory in a React app is_____. (CO1, K2)   1

    (a)   It contains static assets like HTML and CSS files.

    (b)   It stores the JavaScript files for React components.

    (c)   It hosts the database for the app.

    (d)   It is used for unit testing React components.

1-c.   Select the benefits of using Google's Material Design and Material-UI in web development projects.(CO2, K2)   1

    (a)   Faster development process

    (b)   Consistent and visually appealing UI

    (c)   Mobile responsiveness out of the box

    (d)   All of the above

1-d.   Select the type of navigation elements that can be included in an Appbar. (CO2, K2)   1

    (a)   Social media icons

(b) Links to different sections of the application

(c) Image gallery

(d) Video gallery

1-e. In which language is Node.js written? (CO3, K2)   1

(a) JavaScript

(b) C

(c) c++

(d) All of the mention

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. DevOps is an extension of_____(CO4, K2)   1

(a) QA

(b) Agile

(c) Waterfall

(d) None of the above

1-h. Which DevOps principle focuses on product and service thinking?(CO4, K2)   1

(a) Customer-centric action

(b) Continuous Improvement

(c) Create with the end in mind

(d) All of the Above

1-i. The purpose of the "git clone" command is: (CO5, K2)   1

(a) To create a new repository

(b) To delete a branch

(c) To copy an existing repository to a local machine

(d) To merge branches

1-j. The use of the "git log" command in Git (CO5, K2)   1

(a) To create a new commit

(b) To display the commit history of a repository

(c) To switch between branches

(d) To delete a branch

2. Attempt all parts:-

2.a. Define React create app. (CO1, K2)   2

2.b. List two advantages of Material UI. (CO2, K2)   2

2.c. Briefly define Express Framwork.(CO3, K2)   2

2.d.	Name the stages in the DevOps lifecycle.(CO4, K2)	2
2.e.	Illustrate a typical GitHub workflow in the context of MERN stack development.(CO5, K3)	2

SECTION-B   30

3. Answer any <u>five</u> of the following:-

3-a.	Explain all the step involved in creation of a component with example in React.(CO1, K2)	6
3-b.	Demonstrate the phases of the component lifecycle in React, including the methods associated with each phase. (CO1, K3)	6
3-c.	Material-UI help developers to create responsive web applications. Explain in brief (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.	Write the key features of Node.js.(CO3, K3)	6
3.f.	Explain the Scrum methodology and its process flow.(CO4, K2)	6
3.g.	Discuss two key benefits of using version control systems like Git in a MERN stack development environment.(CO5, K2)	6

SECTION-C   50

4. Answer any <u>one</u> of the following:-

4-a.	Define React components. Differentiate between functional components and class components in React. (CO1, K3)	10
4-b.	Explain main files and directories created when setting up a new React application using Create React App. Briefly describe the purpose of each. (CO1, K2)	10

5. Answer any <u>one</u> of the following:-

5-a.	Analyze the role of load balancing in modern IT infrastructures and evaluate its impact on system performance and reliability.(CO2, K4)	10
5-b.	Design a web application scenario in which a Navbar with dropdown menus would enhance user experience, and justify your choices based on usability principles.(CO2, K4)	10

6. Answer any <u>one</u> of the following:-

6-a.	Explain the role of the Hypertext Transfer Protocol (HTTP) in client-server communication in web development, and assess its impact on the efficiency and security of data exchange.(CO3, K3)	10
6-b.	Explain the Significance of Template Engine and describe the key features of Express Framework? (CO3, K3)	10

7. Answer any <u>one</u> of the following:-

7-a.	Provide a detailed overview of the Scrum framework. How does Scrum support iterative and incremental development.(CO4, K2)	10
7-b.	Compare and contrast two DevOps tools, highlighting their strengths and	10

weaknesses in specific scenarios.(CO4, K4)

8. Answer any <u>one</u> of the following:-

8-a.   Identify and evaluate the key configuration settings required when setting up a   10
        Jenkins job with Git and Maven, and analyze their impact on the build and
        deployment process.(CO5, K4)

8-b.   In a MERN stack project, how would you integrate SonarQube into a DevOps   10
        pipeline to ensure code quality?(CO5, K3)