Guru Nanak Dev Engineering College, Ludhiana Department of Information Technology Program B.Tech.(IT) Subject Code Semester PEIT-109 Subject Title Mean Full Stack Web Mid Semester Test (MST) Development Course Coordinator(s) Dr. Palwinder Kaur No. Max. Marks 24 1 hour 30 minutes Time Duration Date of MST Uni. Roll Number Note: Attempt all questions Q. No. Marks COs, Question RBT level QL Describe JavaScript closures with example. CO2, L2 Q2 2 CO1, L3 Demonstrate how to render views in express file? 4 CO1, L6 Q3 Discuss the process of implementation of MVC Pattern. Also explain Vertical and horizontal folder structure with example. 4 Enlist the technologies that make up the MEAN stack? Explain in detail. CO1, L2 Q4 Design a common MEAN stack architecture using a API built in Node.js, CO2, L6 4 **Q**5 Express, and MongoDB? (CO3, 8 Creating a new document/database using MongoDB and preform Q6 CURD Operations like insert, update, read and delete data with CO4), L6 examples. Course Outcomes (CO) Students will be able to Develop web applications using the concept MEAN stack development. Create and design web applications using Node.js and Express framework. 2

| RBT<br>Classification | Lower Order Thinking Levels (LOTS) |               |          | Higher Order Thinking Levels (HOTS) |                |   |  |  |
|-----------------------|------------------------------------|---------------|----------|-------------------------------------|----------------|---|--|--|
|                       |                                    |               | T 2      | L4                                  | 1.5            | L6 ·  |  |  |
| RBT Level             | L1                                 | L2            | Lo       | LT                                  | 2.             | Value of the same |  |  |
| Number                |                                    | 2 1           | Amplying | Analyzing                           | Evaluating     | Creating  |  |  |
| RBT Level Remembering |                                    | Understanding | Applying | Anaryzing                           | D. Caractering |   |  |  |

Identify, formulate and solve engineering problems in the area of dynamic responsive web

Apply the knowledge of AngularJS and MongoDB for web page designing.

Function on multi-disciplinary teams through web application creation

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|   |  |  | mation Technolog  | 6                    |  |               |         |  |  |
| Program   |  | COII.(II)  | emester   |                      | an Full Stack Web                          |               |         |  |  |
| Subject Code  | PEI  | T-109 St   | ıbject Title  |                      | evelopment                                 | pment         |         |  |  |
|   |  |  | ourse Coordinato  |                      | r. Palwinder I                             | alwinder Kaur |         |  |  |
| Mid Semester T  | est (MST) 2  | ,,C  | Course Coordinates  |                      |  |               | 7       |  |  |
| No.   | 24   | T  | Time Duration   |                      | 1 hour 30 minutes                          |               |         |  |  |
| Max. Marks  | 24   |  | Uni. Roll Number  |                      |  |               |         |  |  |
| Date of MST   | 15   | May, 2025 U  | 111. 140  |                      |  |               |         |  |  |
|   | Il avostions   |  |   |                      | 1 00                                       |               | Marks   |  |  |
| Note: Attempt a   | ii questions   | Ouestion   |   |                      | COs,                                       |               | Maik    |  |  |
| Q. No.  |  |  |   |                      |  | RBT level     | 2       |  |  |
|   | orate the concept of   | data binding in  | Angular?  |                      | CO3,                                       | LZ            | 2       |  |  |
| Q1) Elabo   | rate the concept of  |  |   |                      | CO3,                                       | 13            | 2       |  |  |
| Dom.  | onstrate the use of  | directives in an A   | angularJS web app   | lication?            |  |               | 4       |  |  |
| Q2 Demo   | note. How the com  | ponents of the sir   | nple Angular app  | fit and wo           | ork CO4,                                   | בע            |         |  |  |
| (Q3) Illust   | lustrate, How the components of the simple Angular app fit and work logether?  |  |   |                      |  |               |         |  |  |
|   | ether? cuss the process to handle forms and submission of data in  |  |   |                      |  |               |         |  |  |
| Q4) Disci   | dar?   |  |   |                      |  |               |         |  |  |
| Aligi   | Angular?   |  |   |                      |  |               | 4       |  |  |
| Dem   | Demonstrate different levels of services in Angular with example.  |  |   |                      |  |               | 1 8     |  |  |
| Dagi  | Design a single-page modular web application with 1  |  |   |                      |  |               |         |  |  |
| Desi  | navigation and routing parameters?   |  |   |                      |  |               |         |  |  |
| Title 1 2   |  |  |   | 201-01               |  |               |         |  |  |
|   | mes (CO)   |  |   |                      |  |               |         |  |  |
| Course Outco  | III Co (CC)  |  |   |                      |  |               |         |  |  |
| Course Outco  | e able to  |  | ATT ANI etecl   | develor              | nment.                                     |               |         |  |  |
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| Students will b   | e able to elop web applicati   | applications de-   |   | 1                    | decigning                                  |               |         |  |  |
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[Total No. of Questions: 09] Uni. Roll No. .2.30.33

[Total No. of Pages: 2]

Program: B.Tech. (Batch 2018 onward)

Semester: 6

Name of Subject: Mean Full Stack Web Development

Subject Code: PEIT-109

Paper ID: 17209

Time Allowed: 03 Hours

Max. Marks: 60

## NOTE:

1) Parts A and B are compulsory

2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice

3) Any missing data may be assumed appropriately

## Part - A

[Marks: 02 each]

Q1.

(a) Define the term full-stack development and identify one of its key advantages.

(b) List the components of the MEAN stack used in web application development.

Name any two features of Express.js.

d) State the use of Node Package Manager (NPM) in a Node.js environment.

e) Compare the roles of horizontal and vertical folder structure in Express applications.

Categorize types of files rendered statically in an Express web app and justify their use.

## Part - B

[Marks: 04 each]

Q2. Identify the purpose of JavaScript closures in Node.js programming.

Illustrate the use of the MVC pattern in developing Node.js applications.

Describe the process of installing MongoDB and list two of its key features.

Differentiate between AngularJS modules and components using suitable examples.

Analyze the two-way data binding concept in AngularJS.

Evaluate the use of Mongoose in defining MongoDB schemas.

Page 1 of 2

P.T.O.

- Q8. Design a Node.js and Express-based web application to display product listings. Use appropriate tokens such as keywords, identifiers, constants, and operators in your implementation. Also, explain the importance of operator precedence and associativity with examples.
- Develop a code snippet in which static files like CSS and images are served using Express. Identify punctuation symbols used and state their function in the code.
- Q9. Construct a REST API using Express that performs create, read, update, and delete (CRUD) operations on MongoDB. Integrate this API with an Angular frontend and demonstrate a complete data flow using Angular components.
- OR

  Create an Angular application using TypeScript that uses routing, component-based structure, and modular design. Assess how form handling and data submission improve performance in single-page applications.

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