Web Development using MERN Stack	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
CSE-in-EA	6	OAE-CSE-EA	OAE-1	FSD-322T
EAE	6	FSD-EAE	FSD-EAE-2B	FSD-322T

Marking Scheme:
1. Teachers Continuous Evaluation: 25 marks
2. Term end Theory Examinations: 75 marks

Instructions for paper setter:
1. There should be 9 questions in the term end examinations question paper.
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.

Course Objectives :

1.	To learn the Web Development, Designing and validations using HTML, XHTML, XML, CSS, XSLT and JavaScript
2.	To learn and implement the concept of ReactJS
3.	To learn and implement the concept of NodeJS and ExpressJS
4.	To learn and implement the connectivity of MongoDB with web applications

Course Outcomes (CO)

CO 1	To be able to learn the basic implementation and apply HTML, XHTML, XML, CSS, XSLT and JavaScript concepts in web applications
CO 2	To be able to develop a Web application using ReactJS
CO 3	To be able to develop a Web application based on NodeJS and ExpressJS
CO 4	To be able to connect the applications using MongoDB

Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)

	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	1	2	1	1	3	1	-	1	2	-	3	3
CO 2	1	2	1	1	3	1	-	1	2	-	3	3
CO 3	1	2	1	1	3	1	-	1	2	-	3	3
CO 4	1	2	1	1	3	1	-	1	2	-	3	3

UNIT-I

Introduction: Fundamentals of Web Design, Webpage and Website, Web application, Client-server architecture
Markup languages: Introduction to HTML, basics of XTHML, HTML elements, HTML tags, lists, tables, forms, defining XHTML's abstract syntax, XML.
CSS style sheets: Introduction, CSS core syntax, text properties, CSS box model, normal flow box layout, other properties like list, tables, XSLT
Client Side Programming: JAVA Scripts, basic syntax, variables & data-types, literals, functions, objects, arrays, built-in objects, JAVA Script form programming, Intrinsic event handling, modifying element style, document trees, ECMAScript5, ECMAScript6

UNIT-II

ReactJS: Introduction, Templating using JSX, Classes using JSX, Components, State and Props, Lifecycle of Components, Rendering List and Portals, Error Handling, Routers, Redux and Redux Saga, Immutable.js, Service Side Rendering, Unit Testing, Webpack

UNIT-III

NodeJS: Node js Overview, Node js Basics and Setup, Node js Console, Node js Command Utilities, Node js Modules, Node js Concepts, Node js Events, Node js Database Access, Node.js with Express.js, Express.js Request, Express.js Response, Express.js Get, Express.js Post, Express.js Routing, Express.js Cookies, Express.js File Upload, Express.js Middleware, Express.js Scaffolding, Express.js Template.

UNIT - IV

MongoDB: SQL and NoSql concepts, Create and manage MongoDB, Migration of data into MongoDB, MongoDB with NodeJS, Services offered by MongoDB

Textbook(s):
1. Vasan Subramanian, "Pro MERN Stack", Apress Publisher, 2 Edition, ISBN: 9781484243916
2. Chris Northwood, "The Full Stack Developer", Apress Publisher, ISBN: 978-1484241516

References:
1. Greg Lim, "Beginning MERN Stack Applications", Independently Published, Third Edition.
2. "Road for Being MERN STACK Developer", Independently published, ISBN:9798766684855
3. Shama Hoque, " Full Stack React Projects", O'Reilly Media , 2nd Edition.