

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.TECH
BRANCH: CSE**

**SEMESTER : VII
SESSION : MO/2025**

SUBJECT: CS435 FRONTEND DESIGN

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Outline the structure of a typical web browser and explain the interplay between HTML, CSS, and JavaScript.	[5] 1	2,3
Q.1(b)	Describe control flow statements in JavaScript and provide code snippets for if-else and switch statements.	[5] 1	2
Q.2(a)	What are some of the common built-in object methods in JavaScript?	[5] 2	1
Q.2(b)	Write a JavaScript program that will help an elementary-school student learn multiplication. Your program should work as follows: i. Generate two positive one-digit integers. ii. Display a multiplication question such as: How much is 6 times 7? iii. The student types the answer into a text field. iv. The program checks the student's answer: <ul style="list-style-type: none">• If it is correct, display the message "Very good!" and generate a new question.• If it is wrong, display the message "No. Please try again." and let the student try the same question repeatedly until the correct answer is entered. Note: A separate function should be used to generate each new question. This function should be called once when the script begins execution and each time the user answers a question correctly	[5] 2	3
Q.3(a)	Describe different methods of declaring an array in JavaScript. What is the difference between array literals and the Array constructor?	[5] 3	2
Q.3(b)	What is the spread operator in JavaScript? Write a function in JavaScript that accepts an array and returns the sum of the elements in the array without using any looping structures.	[5] 3	3
Q.4(a)	What is an Immediately Invoked Function Expression (IIFE)? Describe the structure and advantages of using IIFE in JavaScript with an example.	[5] 4	2
Q.4(b)	Create a web page which includes the following features i. Include an alert welcoming the user when the page loads. ii. Displays the current page URL, hostname, and protocol. iii. Show the screen width, height and Color depth of the screen in a div which is then applied a class called "display-div" at run time. v. Includes a button that redirects the user to https://www.bitmesra.ac.in .	[5] 4	3
Q.5(a)	Write a JavaScript program that demonstrates "callback hell" using nested setTimeout calls. Your program should log three messages to the console: "Step 1 completed" "Step 2 completed" "Step 3 completed" Each message should appear exactly 3 seconds after the previous one. You must use nested callbacks to achieve this timing. Do NOT use Promises or async/await. Only use setTimeout with nested callbacks.	[5] 5	3
Q.5(b)	Write a JavaScript program to access a form containing two inputs: username and age. On form submission, validate that username has at least 4 characters and age is a number and ≥ 18. If the form is invalid, prevent submission and display a message "Invalid input" inside a <div id="msg">. If valid, display "Form submitted" inside the same <div>.	[5] 5	3