

25

**ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)**  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
**Department of Computer Science and Engineering (CSE)**

SEMESTER FINAL EXAMINATION  
DURATION: 3 HOURS

WINTER SEMESTER, 2022-2023  
FULL MARKS: 150

### CSE 4539: Web Programming

**Programmable calculators are not allowed. Do not write anything on the question paper.**  
Answer **all 6 (six)** questions. Figures in the right margin indicate full marks of questions whereas corresponding CO and PO are written within parentheses.

1. You are given an exam schedule in Table 1.

**Table 1:** Exam Schedule for Question 1.

Date	Final Exam Information				
	Schedule		Room	Program	Course Info.
	Begin	End			
22.12.2023	9.00 AM	12.00 PM	301	BTM	BTM 4739: LT
			302	TVE	CSE 4581: WP
23.12.2023	9.00 AM	12.00 PM	301	CSE	CSE 4539: WP
	1.30 PM	4.30 PM		CEE	MATH 4143: DE
	9.00 AM	12.00 PM	508	BTM	BTM 4145: DT

- a) What are semantic elements in HTML5? How can these be used to define different parts of a web page? 1 + 4  
(CO1)  
(PO1)
- b) Write the corresponding HTML code (only the table part) considering Table 1. 10  
(CO2)  
(PO1)
- c) If you want to present the Table 1 in a multilevel list, what will be the structure of the HTML code (only the list part)? 10  
(CO1)  
(PO1)
2. a) What is the "box model" in CSS, and what components does it include? Explain with an example. 5  
(CO1)  
(PO1)
- b) Explain the differences between *relative*, *absolute*, *fixed*, and *static* positioning in CSS. 10  
(CO2)  
(PO1)
- c) Style an HTML table with CSS having the following requirements: 4 × 2.5  
(CO2)  
(PO2)
- i. Change the background color of alternating table rows.
  - ii. Align text in all table cells to the center.
  - iii. Table headers are distinguishable from table rows.
  - iv. Responsive layout that adapts to different screen sizes.

3. a) Discuss the three ways of inserting a style sheet in an HTML page. (CO1)  
(PO1) 10
- b) How can you modify the styling of HTML elements using JavaScript by accessing and manipulating their CSS properties? (CO2)  
(PO1) 5 × 2  
(CO2)  
(PO2)
- c) Discuss the following selectors with examples.  
i. Simple  
ii. Combinator  
iii. Pseudo-class  
iv. Pseudo-elements  
v. Attribute
4. Analyze the following requirements to design a Task Management System (TMS) website and implement it in your preferred programming and scripting languages: 25  
(CO3)  
(PO3)
- TMS allows users to manage their tasks asynchronously. The application has a form for users to input task details and simulate asynchronous validation using promises. The form includes fields for task name, due date, priority, and description. It has some constraints, validations, and display outputs.
- Constraints:
- Task Name: at least 3 characters long.
  - Due Date: a valid date in the future.
  - Priority: one of three levels - high, medium, or low.
  - Description: Optional, but if provided, should be at least 10 characters long.
- Validations:
- When a user submits the form, prevent the default behavior and asynchronously validate the task information.
  - Simulate asynchronous validation using a function called `validateTask` that takes task details as an object and returns a promise. Assume it takes 2 seconds to validate the task.
- Display outputs:
- If validation succeeds, display a success message.
  - If validation fails, display error messages next to the respective form fields.
5. a) Explain the differences between `useEffect` and `useState` in React. When would you use each one? 5  
(CO1)  
(PO1)
- b) How can you implement middleware in ExpressJS to handle common tasks like logging, error handling, and authentication? 10  
(CO1)  
(PO1)
- c) How can JSON Web Tokens (JWTs) be utilized to safeguard against unauthorized access and data manipulation by users? 10  
(CO2)  
(PO2)

6. IUT has a database of its students, including their names, IDs, majors, sessions, and contact information. The university needs a system to manage this student data efficiently.

a) What are the key differences between MongoDB and MySQL databases?

9

(CO1)

(PO1)

b) Consider the above scenario and implement the following functionalities in ExpressJS with MongoDB/MySQL database:

4 × 4

(CO3)

(PO2)

- i. The system can add new student records to the database.
- ii. The system can view student records with their details. The system should provide options for sorting and filtering the student list based on students' majors and sessions.
- iii. The system can update the information of any student with their student ID. When it clicks the update button, the previous data will be shown on the updated form page.
- iv. The system can delete the information of any student with their student ID. After deleting the record, the updated information will be reflected.