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PES UNIVERSITY

PES University, Bengaluru
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UE19CS204

DECEMBER 2020: END SEMESTER ASSESSMENT (ESA) B TECH 3rd SEMESTER

UE19CS204 – Web Technologies

Time: 3 Hrs	Answer All Questions	Max Marks: 100

1	a)	Describe the structure of HTTP Request and Response messages using an example.	4
	b)	A web page has a form for online registration of a Tennis competition. - The participant can be an adult or a child - Participant must be able to choose if (s)he has previously participated in the same event in one or more of the years 2019-20 /2018-19/2017-18 - The form should provide the controls to accept above mentioned details as well as the personal information like name and gender - The user details must be sent to the server script "/registration" when the form is submitted - The details (s)he enters must be visible in the address bar of her/his browser Write the HTML code for the form with suitable elements and default values.	5
	c)	With a neat diagram, explain the CSS Box model and its significance.	5
	d)	Write a JavaScript function to take a string as input parameter and reverse the case of every alphabet in the string. The function should return the modified string. Ex. changeCase("HeLlo") must return "hElLO".	6
2	a)	A HTML page contains the following: - A table with id "table1" - A button "Add" with id "btn1" - A div with id "display" Add JavaScript to the webpage for the following specifications - On clicking "Add" a new row with 2 cells are added to the table - Populate each cell with a random number (between 1 and 200) - If the cell contains an even number, mouse over should turn the cell green - If the cell contains an odd number, mouse over should turn the cell red - If you click on a cell, the div will be populated with the cell content Note: Write only vanilla JavaScript code. Assume that body tag has an onload="init()" handler.	8
	b)	Write briefly about the two methods of the geolocation object.	4

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	c)	A web page has the following: - A select element with options as Song names and value set to URL of an audio file (ex. <select id="input1"> <option value="faded.mp3">Faded by Alan Walker </option> ... </select>) - A button to fetch the audio asynchronously from the server - A placeholder "div" where the audio fetched is displayed Write JavaScript function to handle the click event for the button. The function should use the **"fetch"** API to asynchronously fetch the "selected" audio file from the server URL (specified in the value property) and display it in the div element. Note: There should be only one audio element shown at any time. Write only JavaScript code. HTML code is not required	5
	d)	Name the method/event supported by web workers for communication between worker and main threads. Show how they are used with an example.	3
3	a)	What is the significance of key property in React? Describe with an example.	5
	b)	Write a React component "Poster" that includes the movie poster image, a paragraph showing the movie title and another paragraph showing the movie director's name. An App component renders multiple Poster components based on the values of image src, title and director name stored in an array of objects. The object members are src, title and director. The values in the array should be passed as properties to the Poster component. Note: Use "map" method or even a simple for loop to traverse through the array of values.	4
	c)	Explain the following methods of the React component life cycle: - componentDidMount - componentDidUpdate - componentWillUnmount	3
	d)	In the game of Minecraft, a player can discover and extract raw materials to craft tools and items. For example, a player can build an axe using sticks and stones. Write a **uncontrolled** React form (using only refs, without states), that has - Two input elements to read the number of sticks and stones a player has (initial values set to 1) - A compute button that displays the number of axes that can be made out of these resources. - A placeholder div to display the number of axes Note: For computation use the following logic. Three stones and two sticks can be used to build an axe. Assuming a player has 10 stones and 4 sticks, we have 3 sets of three stones (10 / 3) and 2 sets of two sticks (4 / 2). Hence only 2 axes (minimum of these numbers) can be built.	8

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4	a)	Write in brief about the important features of Node JS.	4
	b)	Write JavaScript code using NodeJS modules only (not Express JS) to accept a GET request in the form of http://localhost:8000/calc?op=add&op1=10&op2=20 and returns back the calculated output, in this case the addition of 10 and 20, which is 30. The operations supported by this basic calculator are addition, subtraction, multiplication and division.	8
	c)	What are data streams in Node JS? Name the different types of streams with an example for each.	4
	d)	Write Node JS code using the "**readline**" module to read every line in "input.txt". Call the changeCase(str) function with the line read as the parameter and write the value returned on to the console. Note: You do not have to write the changeCase function.	4
5	a)	What are Express middleware functions? Write briefly about the order of execution of middleware functions.	3
	b)	Write server-side script in JavaScript to route requests for GET and POST requests for flight details. The details are stored in the MongoDB database in the following format. {from:"BLR", to:"DEL", dep:"12:25", arr:"14:25", flnum:"6E-2428"} The server script should support the following routes: - GET /flights – return details of all flights - GET /flights/:from/:to – return details of flight between specific airports - POST /flights – save details of a flight in the database (JSON object sent in message body) and return a success or error message	8
	c)	Ronaldino, a back end developer, has to create at least 4 -5 Express routes each for the resources "players", "matches" and "teams". Since he is new to Express, he wants suggestions on how to structure his JavaScript code. Suggest an approach that can be taken by him to solve this problem. Write pseudo-code for the solution.	3
	d)	Write a route called "picsupload" which receives **multiple** image files in a POST request. The route function should save each of them under the "pics" folder in the same directory as the JS file. Any error like, no files uploaded or saving files failed should be handled accordingly. Note: Write only the server JS code. HTML/client code is not required.	6