




Name: Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES Supplementary Examination, December 2023			
Course: Responsive Mobile Platform Program: BTech CSE (All Branches) Course Code: CSMC3019P		Semester: V Time: 03 hrs. Max. Marks: 100	
Instructions: Attempt all Questions			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Early single page web applications written in JavaScript did not support deep linking and rarely had '#' characters in the URLs they used. Explain why modern single page applications that support deep linking do have '#' characters in URLs.	4	CO1
Q 2	Illustrate how DNS can be used to do load balancing across a web application's servers.	4	CO2
Q 3	Some CSS properties are inherited (e.g. font-size) and some properties are not inherited (e.g. border). For the inherited properties, does a DOM Node inherit from the parentNode or offsetParent? Explain your answer.	4	CO3
Q 4	Illustrate how JavaScript running in a Node.js webserver can read a file from disk and send it out over the network to a browser without all the bytes of the file being brought into JavaScript variables.	4	CO4
Q 5	Illustrate what the browser will do when it finds this line in an HTML document: <code><script type="text/javascript" src="/main.js"></script></code>	4	CO1
SECTION B (4Qx10M= 40 Marks)			
Q 6	If you display a web page in the Chrome browser that is entirely fetched using the HTTPS protocol, Chrome will display  next to the URL. If you change the web page to include a small image of something public (e.g. a logo) and use HTTP to fetch the image Chrome will display	10	CO2

	<p> Not Secure next to the URL as if you didn't use HTTPS for anything.</p> <p>Explain why the Chrome developers could justify slapping "Not Secure" on something seemingly benign as an HTTP fetch of a small image. Describe the attack they are worried about.</p>		
Q 7	<p>Web app-based discussion forms frequently define their own markup language rather than simply using HTML and having the browser's rendering engine do the markup. Besides syntax complexity disadvantage of HTML over something like Markdown, describe the key security problem with using HTML as a markup language in a web application.</p>	10	CO3
	OR		
Q 7	<p>Some web applications studiously update the browser's notion of the current location as the user moves around in the application, even though the updates don't change the browser state and are frequently not referenced by any code or person. Describe the possible reasons why web applications might do this.</p>	10	CO3
Q 8	<p>Consider the HTML snippet below:</p> <pre><div id="mainDiv"><p>text 1atext 1b</p><p>text 2atext 2b</p></div></pre> <p>Sketch out the DOM tree representation of this HTML snippet, showing only the parent/child relationships between the code. Non-text nodes in the tree should be labeled with their tag names, whereas text nodes should be labeled with their value.</p>	10	CO4
Q 9	<p>Consider the following HTML and JavaScript program:</p> <pre><!doctype html> <html> <head> </head> <body> <div id="container"> <button id="button">Click me!</button> </div> </body> <script> 'use strict'; function printWindow(event) {</pre>	10	CO1

	<pre> console.log('Window says hello!'); } function printTarget(event) { console.log('Target says hello!'); } function printContainer(event) { console.log('Container says hello!'); } var capture = true; var button = document.getElementById('button'); var container = document.getElementById('container'); window.addEventListener('click', printWindow); button.addEventListener('click', printTarget, capture); container.addEventListener('click', printContainer,capture); </script> </html> The page loads and the user wait a few seconds before clicking the button that says "Click me!". What's the console output? </pre>		
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SECTION-C
(2Qx20M=40 Marks)

Q 10	<p>The Node.js runtime includes a function setImmediate that allows the call to directly add a callback to the Node.js event loop. It is like the DOM's setTimeout function except there is no delay.</p> <p>Consider the following Node.js program:</p> <pre> for (var i = 0; i < 2; i++) { setImmediate(function(err) { console.log(i); }); console.log(4); } </pre> <p>a) Write down what is printed after the for-block code above is executed.</p> <p>Suppose the setImmediate call is wrapped in an immediately invoked function expression like:</p> <pre> for (var i = 0; i < 2; i++) { (function (i) { setImmediate(function(err) { console.log(i); </pre>	20	CO2
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	<pre>}); })(i); console.log(4); }</pre> <p>b) Does this affect the order/contents of what is printed to the console? If yes, state so and write down what is now printed after the for block above is executed (Order matters). If no, state so and briefly justify your answer.</p>		
Q 11	<p>Consider the following HTML document:</p> <pre><html> <body> <div id="one"> One <div id="two"> Two <div id="three"> Three <div id="four"> Four </div> </div> </div> </div> </body> </html></pre> <p>We run the following JavaScript on the document:</p> <pre>const divs = window.document.getElementsByTagName('div'); for (let i = 0; i < divs.length; i++) { divs[i].addEventListener("click", (e) => console.log('bubble', e.currentTarget.id, e.currentTarget == e.target, e.currentTarget.textContent.replace(/[\s]/g, "")), false); divs[i].addEventListener("click", (e) => console.log('capture', e.currentTarget.id, e.currentTarget == e.target, e.currentTarget.textContent.replace(/[\s]/g, "")), true); }</pre>	20	CO3

	Describe what the output would be if the user were to click on the word "Three" in the document.		
	OR		
Q 11	<p>When defining routes in Express.js we use a call of the form: <code>app.get(urlPath, callbackFunction);</code> so that the callbackFunction will be invoked when an HTTP GET request with a path of urlPath comes in.</p> <p>The number of arguments in the definition of the callbackFunction varies. Some route definitions have three arguments: <code>app.get(urlPath, function (request, response, next) { ...</code> while others only use two arguments: <code>app.get(urlPath, function (request, response) { ...</code></p> <ol style="list-style-type: none"> 1. When should the next parameter be used by the callback? 2. Would it make sense to have callback with only the request parameter: <code>app.get(urlPath, function (request) { ...</code> Justify your answer. 	20	CO3