Department of Information Technology, Jadavpur University
Bachelor of Information Technology 3rd year, 1st Semester Supplementary Examination – 2024
Subject: **Web Technologies-I**

Time : Three hours **Full Marks: 100**

Different parts of the same question should be answered together.

CO1 [20]	[1] Answer either (a) or (b) in this block (a) [4+8+8] i) What else we can do using HTTP except transferring file? ii) What are web browsers and what are they used for? What web browsers do you know? iii) Describe with examples the format of an HTTP URL. (b) [4+8+8] i) Write the usage of hidden field in an HTML document. ii) Discuss differences between GET and POST methods of the HTTP protocol. iii) Suppose value of the "method" attribute of <form> element is mentioned as "POST". Write HTTP request method for it.
CO2 [20]	[2] Answer either (a) or (b) in this block (a) [4+8+8] i) Write different scenarios where meta tags are used in HTML? ii) Write a HTML document as follows: Page contains a single link "browser name" with default color blue. If the mouse is placed on the link, the color will change to red and cursor will appear as hand cursor. If the link is clicked, the name of the browser will be shown on an alert dialog box. iii) Write a Cascading Style Sheet that will make the color of all left aligned paragraphs red and right aligned paragraph green and justified paragraphs blue. Write also a sample HTML page. (b) [4+8+8] i) Write with example the difference between "innerHTML" and "innerText"? ii) How do you refer an external CSS file from a HTML page? iii) A link is contained in an HTML frame. How can you indicate (i) that clicking the link will replace the content of this frame, leaving the other frames unchanged, (ii) that clicking the link will replace the whole browser window content?
CO3 [20]	[3] Answer either (a) or (b) in this block (a) [4+8+8] i) Write a JavaScript function to display all tags used in a HTML document. ii) Write a minimal HTML page *home.html* as follows: It observes if the user is idle for more than 1 minute and if so it redirects another page *logout.html*. iii) Write a JavaScript function to find the make all paragraphs in an HTML document justified. (b) [4+8+8] i) Write a HTML page *first.html* which when loaded will redirect another page *second.html* after 5 seconds.

	ii) Draw the DOM tree for the following segment of code: This is a sample of some HTML you might have in your document . Suppose the variable ptr points to the node corresponding to the br in the DOM tree. How can you access the attribute title of p tag? iii) Write a minimal HTML page *home.html* as follows: It observes if the user is idle for more than 1 minute and if so it redirects another page *logout.html*.
CO4 [20]	[4] Answer either (a) or (b) in this block (a) [4+8+8] i) Write a HTML documents to display the current date and time on the status bar. ii) Suppose a resource that was requested by the client is not found by the server. Write a sample response message for it. iii) Write a JavaScript function to validate the price (taken as an argument) of an item up to two decimal digits using regular expression. (b) [4+8+8] i) What benefits does AJAX bring? ii) Briefly outline an AJAX based program. iii) Write with examples the usage of 'for-in' construct in JavaScript?

CO5 [20]	[5] Answer either (a) or (b) in this block
	(a) [4+8+8]
	i) Find the sequence generated by the following XQuery expression:
	`for $i in (1 to 5) return for $j in (1 to $i) return $j`
	ii) Describe with examples the format of a location step in XPath.
	iii) Write an equivalent XPath expression for the following XQuery expressions.
	`empty(for $i in //student[name='Tom']/marks return if($i >= 50) then () else false())`
	`empty(for $i in //student[name='Tom']/marks return if($i < 50) then false() else ())`
	(b) [4+8+8]
	i) The age of an employee is a positive integer and less than 128. Create a data type for it in schema.
	ii) How you define optional and required attributes in schema?
	iii) Mention benefits of schema over DTD.

CO5 [20]

[5] Answer either (a) or (b) in this block

(a) [4+8+8]

i) Consider the following XML document containing information about the different books on different category. Write an XSLT document to display titles of books on "literature".

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<bookstore>
     <book category="literature">
          <title lang="beng">Sanchoita</title>
          <author>Rabindranath Tagore</author>
          <year>2009</year>
          <price>200.00</price>
     </book>
     ...
</bookstore>
```

ii) Write the rules that an XML document must follow to be well-formed.

iii) Write an XML document to store emails. Also write a schema for it.

(b) [4+8+8]

i) Define an empty element and an element that has arbitrary contents in DTD.

ii) Suppose that <employee> tag in an XML document has following children tags: one <fname>, optional <middleInitial> and one <lname> tag in order which contain first name, middle initial and family name of the employee respectively. Write schema declaration for the element <employee>.

Also write a DTD for the above element.

iii) Consider the following element <population> which must have a year attribute. Create a data type for this element. Note that the element content is a non-negative integer.

```
<population year="2009" unit="million">100</population>
```

CO1: **Explain** Web programming paradigms and advanced client-side web technologies (K2, A2)

CO2: **Explain, differentiate** and **recognize** different server-side web programming techniques (K2, A3)

CO3: **Sketch** server-side programs and **apply** Java based technologies to **solve** them (K3, A3)

CO4: **Apply** CGI based technologies to **develop** server-side programs (K3, A3)

CO5: **Describe** and **illustrate** service discovery in web frameworks (K2, A2)