WEB TECHNOLOGY
(CSBS 4134)

Time Allotted : 2½ hrs   **Full Marks : 60**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and
<u>any 4 (four)</u> from Group B to E, taking <u>one</u> from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A

1. Answer any twelve: **12 × 1 = 12**

Choose the correct alternative for the following

(i) Among the following, on which architectural pattern is AngularJS based?
(a) Decorator pattern   (b) Observer pattern
(c) MVVM architecture pattern   (d) MCV architecture pattern

(ii) Identify the incorrect HTML tag among the following
(a) <input>   (b) <select>
(c) <list>   (d) <textarea>

(iii) Which of the following statements are true?
(a) Node.js is a server-side language.
(b) Node.js is a client-side language.
(c) Node.js is both a server and client-side language.
(d) Node.js is a procedural language.

(iv) Why were cookies designed?
(a) For server-side programming   (b) For client-side programming
(c) For procedural programming   (d) For non-procedural programming.

(v) MongoDB stores all documents in _____.
(a) tables   (b) collections
(c) rows   (d) all of the mentioned

(vi) On which model is www based upon
(a) client-server   (b) local-server
(c) 3 tier   (d) 2 tier.

(vii) How many sizes of headers are available in HTML by default?
(a) 5   (b) 1
(c) 3   (d) 6.

(viii) Will the following JavaScript code work?
var js = (function(x) {return x*x;}(10));
(a) Exception will be thrown   (b) Memory leak
(c) Error   (d) Yes, perfectly.

(ix) What will be the output of the following JavaScript code?
```
var a=5 , b=1
var obj = { a : 10 }
// with keyword in JavaScript
with(obj)
{
        alert(b)
}
```
(a) 1   (b) 10   (c) 5   (d) Error.

(x) _____ is an interactive shell that processes Node.
(a) REPL   (b) REAL
(c) RESP   (d) RAPL

Fill in the blanks with the correct word

(xi) We can kill a process in Node.js using the keyboard shortcut is _____.

(xii) When you query a collection, MongoDB returns a _____ object that contains the results of the query.

(xiii) A debugging tool for NodeJS is _____.

(xiv) The command to install nodemon in NodeJS is_____.

(xv) The father of AngularJS is _____.

Group - B

2. (a) What is HTML Web Workers? Write a full HTML Code to implement Web Worker functionality. *[(CO2)(Apply/IOCQ)]*
   (b) Give a simple implementation of the <video> tag to embed a video stored at http://www.xyz.com/abc_video.mp4. Give the video a width of 640 pixels by 360 pixels. Provide the user with controls. *[(CO2)(Apply/IOCQ)]*
   (c) What is the purpose of metadata? Explain <meta> tag within an HTML document. *[(CO1)(Understand/LOCQ)]*
   4 + 4 + 4 = 12

3. (a) Write the difference between Session Storage and Cookies. Explain the 2 methods of Session Storage. *[(CO2)(Understand/LOCQ)]*
   (b) What are some of the key new features in HTML5? *[(CO2)(Remember/LOCQ)]*
   (c) Write the code necessary to create a 300 pixel by 300 pixel <canvas>. Within it, paint a blue 100 pixel by 100 pixel square with the top-left corner of the square located 50 pixels from both the top and left edges of the canvas. *[(CO2)(Apply/IOCQ)]*
   4 + 4 + 4 = 12

Group - C

4. (a) Explain with examples of JavaScript code to implement: slice(), splice() methods of Array. *[(CO3)(Apply/IOCQ)]*
    (b) Describe the functionality of the following HTML DOM events with JavaScript code: mousedown, load. *[(CO3)(Apply/IOCQ)]*
    (c) Explain with examples of JavaScript code to implement: shift(), unshift() methods of Array. *[(CO3)(Apply/IOCQ)]*

    4 + 4 + 4 = 12

5. (a) Write JavaScript program that accepts a string as a parameter and converts the first letter of each word of the string in upper case.
        INPUT   : the students of csbs final year
        OUTPUT : The Students Of Csbs Final Year. *[(CO3)(Apply/IOCQ)]*
    (b) Write JavaScript function(s)/program to
        Validate an HTML student registration form containing roll no, first name, middle name, last name, password, date of birth, mobile number, email address, marks obtained, grade point, with the following validation rules :
        *   All the fields except for middle name cannot be empty.
        *   Roll no. will be consisting of digits only
        *   First name, middle name (if present), last name will be consisting of alphabets only.
        *   Password length will be 6 to 14, containing alphabets, digits and special characters @, $, #, _ and must contain at least one alphabet, at least one digit and at least one of the special characters
        *   Age must be at least 18 years.

        [(CO3)(Apply/IOCQ)]

    2 + (5 × 2) = 12

Group - D

6. Create one Flight Booking System using MongoDb Database. Designs the system do the following operation.
    (i) Create a database named "XYZ Airlines". Create collections named "Airbus" and "Customer". *[(CO6) (Apply/HOCQ)]*
    (ii) In the Airbus collection inserts two documents:-
        Airbus Id: "A01", Airbus Name: "Pushpak", Capacity: 254, Year of Manufacture: 2023.
        Airbus Id: "A02", Airbus Name: "Akashpath, Capacity: 356, Year of Manufacture: 2022.

        In the Customer collection insert two documents:-
        Customer Id: "C01", Customer Name: "Tapati Roy", Contact No: 234567891, Address: "Kolkata".
        Customer Id: "C02", Customer Name: "Dola Mitra", Contact No: 735921684, Address: "Delhi". *[(CO6) (Apply/HOCQ)]*

(iii) (a) Find the list of Airbus whose Year of Manufacture is 2022.
(b) Change the Address to "Madras" whose Id is "C02"
(c) Delete the Airbus Details who's Capacity are more than 300.

[(CO6)(Apply/IOCQ)]
(2 + 4 + 6) = 12

7. (a) Explain the Workflow of Nodejs Server with proper diagram.
[(CO4)(Remember/LOCQ)]
(b) What is Node.js File System Module? How you can update files using File System module, explain with a proper example. *[(CO4)(Apply/IOCQ)]*
(c) What is NPM? With a proper example explain how you can implement NPM.
[(CO4)(Apply/IOCQ)]
4 + 4 + 4 = 12

Group - E

8. (a) Execute a function in AngularJS when the value of the input field changes it counts and display the number of changes. Implement the function using AngularJS ng- change Directive. *[(CO5)(Apply/IOCQ)]*
(b) What is AngularJS Filters? Explain the utility of filter. Write a function in angularJS that take all the states of India in an array and return the names of the states that contains the letter "W". Implement this using ng-repeat.
[(CO5)(Apply/IOCQ)]
6 + 6 = 12

9. (a) What is the functionality of Data binding in AngularJS. Explain with an example that takes two text fields that are bound together with two ng-model directives.
[(CO5)(Apply/IOCQ)]
(b) Using an AngularJS, create your own directive, containing a custom validation function, and refer to it by using my-directive. The field will only be valid if the value contains the character "p". *[(CO5)(Apply/IOCQ)]*
(c) What is ng-change directive? Explain the usages of ng-change directive with proper example of AngularJS. *[(CO5)(Apply/IOCQ)]*
4 + 4 + 4 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	16.67	77.08	6.25

Course Outcome (CO):

After the completion of the course students will be able to
CSBS4134.1   Understand the concepts of semantic web technology.
CSBS4134.2   Apply the concept of HTML to develop a webpage.
CSBS4134.3   Apply the concept of java script to develop a webpage.
CSBS4134.4   Explore Node.js create component based web pages.
CSBS4134.5   Explore Angular features and create component based web pages.
CSBS4134.6   Design Front-end web pages and connect to the MONGODB Databases.

LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.