

**WEB TECHNOLOGY
(CBS3232)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one 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) How can you open a link in a new browser window?
(a) (b)
(c) (d)
- (ii) What is the correct CSS syntax for making all the <p> elements bold?
(a) p {font-weight:bold;} (b) p {text-size:bold;}
(c) <p style="font-size:bold;"> (d) <p style="text-size:bold;">
- (iii) What is the preferred way for adding a background colour in HTML?
(a) <body background="yellow">
(b) <background>yellow</background>
(c) < body style="background-color:yellow">
(d) <background color="yellow">text<background>
- (iv) What is the result of trying to extend the length of an array using a function in JavaScript?
function extendArray(arr) {
arr.push(5);
}
let myArr = [1, 2, 3];
extendArray(myArr);
console.log(myArr.length);
(a) 3 (b) 4
(c) 5 (d) Error
- (v) In JavaScript, what is a callback function?
(a) A function that runs after the page loads
(b) A function passed as an argument to another function
(c) A function that calls itself
(d) A function that performs an HTTP request

- (vi) Which operator is used to check both the value and the type of a variable in JavaScript?
 (a) == (b) ===
 (c) != (d) !==
- (vii) What is the purpose of JavaScript in web development?
 (a) To structure web pages
 (b) To style web pages
 (c) To add interactivity and dynamic content to web pages
 (d) To store data on the server
- (viii) What is Node.js primarily used for?
 (a) To create client-side interfaces (b) To act as a DBMS
 (c) To build server-side applications (d) To enhance CSS
- (ix) What type of database is MongoDB?
 (a) Relational (b) Document-Oriented
 (c) Graph (d) Key-Value
- (x) In MongoDB, what is the role of the mongod process?
 (a) Manages the database (b) Runs the shell interface
 (c) Manages client connections (d) Handles replication

Fill in the blanks with the correct word

- (xi) _____ CSS selectors are used to specify a group of elements.
- (xii) _____ tag is used to embed css in html page.
- (xiii) _____ is used to call a JavaScript Code Snippet.
- (xiv) The Node.js modules can be exposed using _____.
- (xv) In MongoDB _____ operations modify the data of a single collection.

Group - B

2. (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
3. (a) What are pseudo classes and pseudo elements in CSS? [[CO2](Analyse/IOCQ)]
- (b) What is CSS Links? Explain the different links states with an example. [[CO2](Analyse/HOCQ)]
- (c) Create one page for the “Heritage College” with the following meta data:-
 (i) The character encoding scheme of a HTML file is “UTF-8”
 (ii) It should define the name of the property with its value.

(iii) The page should be properly visible on a mobile phone and also on a computer screen.

(iv) The web page should refresh after 8 sec.

[[CO2](Apply/IOCQ)]

4 + 4 + 4 = 12

Group - C

4. (a) What do you understand by asynchronous programming? Write a JavaScript code to implement real-world use cases for asynchronous programming?

[[CO3](Apply/IOCQ)]

(b) Explain with examples of JavaScript code to implement: slice(), splice() methods of Array.

[[CO3](Apply/IOCQ)]

(c) Describe the functionality of the following HTML DOM events with JavaScript code: mousedown, load.

[[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. (a) Write down the architecture of Node.js Server.

[[CO4](Remember/LOCQ)]

(b) What are the Components of the Node.js Architecture?

[[CO4](Remember/LOCQ)]

(c) Explain the Workflow of Nodejs Server with proper diagram.

[[CO4](Remember/LOCQ)]

4 + 4 + 4 = 12

7. (a) What are buffers? How to create buffers? How to decode buffers?

[[CO4](Remember/LOCQ)]

(b) What are Events and Event Emitters?

[[CO4](Remember/LOCQ)]

(c) Give an example of readable stream with flowing mode?

[[CO4](Apply/IOCQ)]

4 + 4 + 4 = 12

Group - E

8. Create one Hospital Management System using MongoDB Database. Designs the system do the following operation.
- (I) Create a database named "ABC Hospital". Create collections named "Doctor" and "Patient". *[[CO5](Apply/HOCQ)]*
- (II) In the Doctor collection insert two documents:-
Doctor Id: "D01", Doctor Name: "Dr. Arijita Nandi", Qualification: "MBBS", Reg No: 5326, Year of Exp: "5 Years".
Doctor Id: "D02", Doctor Name: "Dr. Bidisha Das", Qualification: "MD", Reg No: 7359, Year of Exp: "7 Years".
In the Patient collection insert two documents:-
Patient Id: "P01", Patient Name: "Tapati Roy", Contact No: 234567891, Address: "Kolkata", No. of Visit : 5.
Patient Id: "P02", Patient Name: "DolaMitra", Contact No: 735921684, Address: "Delhi", No. of Visit : 7. *[[CO5] (Apply/HOCQ)]*
- (III) (i) Find the list of Doctors whose Qualification is "MBBS"
(ii) Change the Address to "Madras" whose Id is "P02"
(iii) Delete the Doctors Details who's Qualification are "MD". *[[CO5](Apply/IOCQ)]*
(2 + 4 + 6) = 12
9. (a) Explain ACID properties in Relational Databases and how they differ from NoSQL systems. *[[CO5](Apply/IOCQ)]*
(b) How do Graph databases differ from Column-Family databases? Explain with use cases. *[[CO5](Apply/IOCQ)]*
(c) What are the challenges faced while integrating databases with web applications? *[[CO6](Apply/IOCQ)]*
4 + 4 + 4 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	45.83	50.01	4.16