

**INTERNET TECHNOLOGY
(INFO 4232)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

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

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) JSON stands for “_____”
(a) JavaScript Object Notation (b) JavaScript Original Notation
(c) JavaScript Oriented Notation (d) JavaScript Ordered Notation.
- (ii) Object.keys() returns an array of the names of the _____ of an object.
(a) enumerable own properties (b) non enumerable own properties
(c) symbol properties (d) string properties
- (iii) The purpose of extensible attribute is to _____.
(a) make all of the own properties of that object non configurable
(b) to configure and bring a writable property
(c) “lock down” objects into a known state and prevent outside tampering
(d) to include new properties into the object
- (iv) Identify the process done in the following JavaScript code snippet
o = {x:1, y:{z:[false,null,“”]}};
s = JSON.stringify(o);
p = JSON.parse(s);
(a) Object Encapsulation (b) Object Serialization
(c) Object Abstraction (d) Object Encoding.
- (v) What will happen if reverse() and join() methods are used simultaneously?
(a) Reverses and stores in the same array
(b) Reverses and concatenates the elements of the array
(c) Reverses
(d) Stores the elements of an array in normal order.
- (vi) _____ keyword is added to functions to tell them to return a promise rather than directly returning the value.
(a) await (b) sync
(c) async (d) wait

- (vii) _____ executes a particular block of code once after a specified time has elapsed.
(a) setTimeout() (b) setInterval()
(c) both (a) and (b) (d) none of these.
- (viii) The pop() method of the array does which of the following task?
(a) Decrements the total length by 1
(b) Increments the total length by 1
(c) Prints the first element but no effect on the length
(d) Updates the element.
- (ix) Node.js runs on _____
(a) client (b) server
(c) both client and server (d) none of these.
- (x) The _____ directive is a container that put the content provided by the routing.
(a) ng-bind (b) ng-init
(c) ng-view (d) ng-contain

Group - B

2. (a) Write the purpose of toString() method in the context of JavaScript. State the differences between Java and JavaScript. State the purpose of ECMAScript standard in the context of JavaScript. *[[C01](Remember/LOCQ)]*
- (b) State the property attributes in the context of JavaScript Object. Define associative array in the context of JavaScript. State purpose of spread operator(...) in the context of JavaScript Array. *[[C01](Understand/LOCQ)]*
(2 + 2 + 2) + (2 + 2 + 2) = 12
3. (a) Describe the join(), reverse(), sort() and slice() JavaScript array methods with proper statements. *[[C01](Understand/LOCQ)]*
- (b) Write a program to develop a simple calculator using JavaScript. Write JavaScript functions to compute factorial of a number. *[[C01](Apply/HOCQ)]*
4 + (4 + 4) = 12

Group - C

4. (a) What is lexical scoping? Explain the concept of closure in the context of JavaScript with example. *[[C02](Analyse/IOCQ)]*
- (b) What is Callback in the context of JavaScript? Give an example. *[[C02](Understand/LOCQ)]*
(2 + 4) + (2 + 4) = 12
5. (a) State the fundamental rule of lexical scoping in the context of the JavaScript function. Define callable objects and Higher-Order Functions. *[[C02](Understand/LOCQ)]*

- (b) Explain the primary purpose of bind() in the context of the JavaScript function with example. Write sample code to give an example of the private property accessor methods using closures.

[[CO2](Apply/HOCQ)]

$$(2 + 2) + (4 + 4) = 12$$

Group - D

6. (a) Describe the following destructuring types with example in the context of Typescript. (i) Array destructuring
(ii) Tuple destructuring
(iii) Object destructuring. [[CO3](Understand/LOCQ)]
- (b) Explain the concept of optional properties of an interface in the context of Typescript. State the differences between the static and instance sides of classes in the context of Typescript. [[CO3](Analyse/IOCQ)]
- $$6 + (3 + 3) = 12$$
7. (a) Explain the concept of template strings with example in the context of TypeScript. Define rest parameters in the context of TypeScript? [[CO3](Analyse/IOCQ)]
- (b) State the differences between NodeJs and the Browser. Differentiate setTimeout() and setInterval() functions in the context of NodeJs with example. [[CO3](Remember/LOCQ)]
- $$(4 + 2) + (2 + 4) = 12$$

Group - E

8. (a) Describe the custom form controls in the context of AngularJS. [[CO5](Understand/LOCQ)]
- (b) Discuss custom model update triggers and non-immediate (debounced) model updates in the context of AngularJS forms. [[CO5](Understand/LOCQ)]
- (c) Define \$routeProvider in the context of AngularJS module. [[CO5](Understand/LOCQ)]
- $$4 + 4 + 4 = 12$$
9. (a) Describe the process of interpolation in the context of AngularJS with example. [[CO5](Evaluate/HOCQ)]
- (b) Explain the file structure of app component in the context of AngularJS. Discuss how Event Binding works in AngularJS. [[CO5](Understand/LOCQ)]
- $$6 + (3 + 3) = 12$$

<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	<i>58.33</i>	<i>18.75</i>	<i>22.92</i>

Course Outcome (CO):

After the completion of the course students will be able to

1. Add interactive behavior to web pages.
2. Create web apps.
3. Use Nodejs for non-blocking, event-driven servers.
4. Use Nodejs for traditional web sites and back-end API services.
5. Create Single Page Application in a very clean and maintainable way using AngularJS.
6. Write client side applications using AngularJS in a clean Model View Controller (MVC) way.

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