

INTERNET TECHNOLOGY
(INFO 4232)

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any4 (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) JavaScript is a _____ language.
 - (a) strongly typed
 - (b) weak
 - (c) loosely typed
 - (d) strong
- (ii) The value returned by a _____ promise becomes the parameter passed to the next .then() block's executor function.
 - (a) fulfilled
 - (b) rejected
 - (c) pending
 - (d) blocked
- (iii) The _____ directive bind the inner HTML of the element to the specified model property.
 - (a) ng-bind
 - (b) ng-init
 - (c) ng-model
 - (d) ng-app
- (iv) _____ 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
- (v) _____ executes a particular block of code once after a specified time has elapsed.
 - (a) setTimeout()
 - (b) setInterval()
 - (c) timeout()
 - (d) timein()

- (vi) What will happen if `reverse()` and `join()` methods are used simultaneously?
- Reverses and stores in the same array
 - Reverses and concatenates the elements of the array
 - Reverses
 - Stores the elements of an array in normal order.
- (vii) What will be the possible output of the following JavaScript code?
- ```
var a = [1,2,3,4,5];
a.slice(0,3);
```
- Returns [1,2,3]
  - Returns [4,5]
  - Returns [1,2,3,4]
  - Returns [1,2,3,4,5]
- (viii) 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);
```
- Object Encapsulation
 - Object Serialization
 - Object Abstraction
 - Object Encoding
- (ix) What is Model in MVC?
- Model represents server side data
 - Model represents data stored in database
 - Model is the lowest level of the pattern responsible for maintaining data
 - None of the above.
- (x) Which of the following class implements read only properties and methods?
- mutable
 - immutable
 - native
 - host

Fill in the blanks with the correct word

- (xi) The purpose of extensible attribute is to _____.
- (xii) Node.js runs on _____.
- (xiii) _____ describes how a parser resolves variable names when functions are nested.
- (xiv) Type script provides type checking at _____.
- (xv) _____ directive initializes an AngularJS application..

Group - B

2. (a) Explain the concept of arrow functions with example in the context of JavaScript functions.

[[CO1](Remember/LOCQ)]

- (b) Describe the dot (.) or square bracket ([]) operators to obtain the value of a property in the context of JavaScript. [[C01](Understand/LOCQ)]
- (c) Describe rest parameters and variable-length argument lists with example in the context of JavaScript. [[C01](Understand/LOCQ)]
- 4 + 4 + 4 = 12**
3. (a) Explain how extends keyword use for sub classing in the context of JavaScript class. [[C01](Understand/LOCQ)]
- (b) Explain the following JavaScript array creation methods with example.
- (i) Array Literals
- (ii) Array() Constructor
- (iii) Array.of(). [[C01](Understand/LOCQ)]
- (c) Explain the concept of sparse arrays in the context of JavaScript array. [[C01](Remember/LOCQ)]
- 4 + 6 + 2 = 12**

Group - C

4. (a) Define lexical scoping with example in the context of JavaScript. [[C02](Analyse/IOCQ)]
- (b) Explain the purpose of bind() method in the context JavaScript function. [[C02](Remember/LOCQ)]
- (c) Describe spread operator with example for JavaScript function calls. [[C02](Understand/LOCQ)]
- 4 + 4 + 4 = 12**
5. (a) Give an example of asynchronous programming with the callbacks in the context of JavaScript. [[C02](Analyse/IOCQ)]
- (b) Describe the async functions and the await keyword with example in the context of asynchronous JavaScript. [[C02](Understand/LOCQ)]
- 6 + 6 = 12**

Group - D

6. (a) Give the examples of complex types with Unions and with Generics in the context of TypeScript. [[C03](Analyse/IOCQ)]
- (b) Describe the various ways to terminate a Node.js application. [[C03](Remember/LOCQ)]
- (c) Explain the two ways of importing an object or a function in Node.js. [[C03](Understand/LOCQ)]
- 4 + 4 + 4 = 12**
7. (a) Briefly explain the purpose of the message queue and the job queue in the context of Node.js event loop. [[C04](Understand/LOCQ)]
- (b) Explain the purpose of EventEmitter class in the context of Node.js. [[C04](Remember/LOCQ)]

- (c) State the purpose of Node.js os module. Write the JavaScript statements to create a readable and writable stream in the context of Node.js stream.

[[C04](Remember/LOCQ)]

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

Group - E

8. (a) Give the examples of the use of AngularJS expression for the following types .

- (i) AngularJS Numbers
- (ii) AngularJS Strings
- (iii) AngularJS Objects
- (iv) AngularJS Arrays.

[[C05](Analyse/IOCQ)]

- (b) Compare the AngularJS Expressions and JavaScript Expressions.

[[C05](Understand/LOCQ)]

- (c) Define the AngularJS Data Binding.

[[C05](Remember/LOCQ)]

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

9. (a) Create an AngularJS application called myShoppingList with following facilities.

- (i) Add items
- (ii) Remove items.

[[C06](Create/HOCQ)]

- (b) Create an AngularJS application to execute some AngularJS code when an button element is being clicked.

[[C06](Create/HOCQ)]

- (c) Create a AngularJS Form containing two text boxes for the firstname and the lastname as inputs from a user and a reset button to reset the values of the textboxes.

[[C06](Create/HOCQ)]

$$4 + 4 + 4 = 12$$

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	64.58	22.91	12.5

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.