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)   BigInt literals are written as a string of digits followed by a lowercase letter_____.
           (a) m   (b) n
           (c) p   (d) i.

    (ii)   Void is a _____ operator.
           (a) unary   (b) binary
           (c) ternary   (d) null

    (iii) Undefined is a predefined global _____
           (a) keyword   (b) variable
           (c) constant   (d) object.

    (iv)   JavaScript is a _____ language.
           (a) strongly typed   (b) weak
           (c) loosely typed   (d) strong

    (v)   The spread operator is used to _____ the elements of an array.
           (a) spread out   (b) spread in
           (c) pack   (d) collect

    (vi)   Type Script provides type checking at _____
           (a) run time   (b) compile time
           (c) load time   (d) none of the above.

    (vii) 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

(viii) 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

(ix) _____ describes how a parser resolves variable names when functions are nested.
  (a) Promises
  (b) Lexical scoping
  (c) Callback
  (d) Event handler

(x) The _____ module facilitates a application to become a Single Page Application.
  (a) ngBind
  (b) ngRoute
  (c) ngModel
  (d) ngApp.

Group- B

2. (a) State the purpose of global object in the context of JavaScript. How "strict equality operator(===)" is different from "normal equality operator(==)". What is destructuring assignment in the context of JavaScript?
[(CO1)(Remember/LOCQ)]

 (b) State the purpose of for/of loop with example. Explain the concept of string interpolation in the context of JavaScript with example.
[(CO1)(Evaluate/HOCQ)]
(2 + 2 + 2) + (3 + 3) = 12

3. (a) Define arrow function in the context of JavaScript Array. Explain how public field declaration is different from private field declaration in the context of JavaScript Class with example. [(CO1)(Analyze/IOCQ)]

 (b) Explain the concept of symbol in the context of JavaScript with example. Define Typed Array in the context of JavaScript with example.
[(CO1)(Understand/LOCQ)]
(2 + 4) + (3 + 3) = 12

Group - C

4. (a) State the differences between Promises and Callbacks. Give an example of asynchronous programming with async and await in the context of JavaScript.
[(CO2)(Analyze/IOCQ)]

 (b) What is Promises in the context of JavaScript? Give an example.
[(CO2)(Analyze/IOCQ)]
(2 + 4) + (2 + 4) = 12

5. (a) What is high order function? Give an example of high order function.
[(CO2)(Understand/LOCQ)]

 (b) Explain the primary purpose of bind( ) in the context of the JavaScript function with example. Define callable objects. [(CO2)(Analyze/IOCQ)]
(2 + 4) + (4 + 2) = 12

Group - D

6. (a) In which context TypeScript differs with JavaScript. Describe the benefits of TypeScript. Describe method overriding with the help of TypeScript.
[(CO3)(Remember/LOCQ)]

   (b) Explain the concept of Event Loop in the context of NodeJs with example. What is Job Queue in the context of NodeJs? [(CO3)(Analyze/IOCQ)]

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

7. (a) What is Callback in the context of NodeJs? How many types of stream objects are available in NodeJs. Explain how Piping mechanism connect output of one stream to another stream in NodeJs. [(CO4)(Understand/LOCQ)]

   (b) Differentiate import and require in the context of NodeJS module handling. State purpose of http and fs module in brief in the context of NodeJS.
[(CO4)(Analyze/IOCQ)]

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

Group - E

8. (a) Explain the concept of controllers with example in the context of AngularJS. State the purpose of ng-model directive in the context of AngularJS.
[(CO5)(Remember/LOCQ)]

   (b) Explain the concept of ng-repeat directive with example in the context of AngularJS. Explain purpose of restrict property with the value "A" in the context of AngularJS. [(CO5)(Understand/LOCQ)]

(3 + 3) + (3 + 3) = 12

9. (a) Explain the concept of MVC and MVW architecture in the context of AngularJS. State the purpose of ng-app directive in the context of AngularJS.
[(CO6)(Remember/LOCQ)]

   (b) Explain the concept of $http service in AngularJS with example. State the shortcut methods of the $http service in AngularJS.
[(CO6)(Understand/LOCQ)]

(3 + 3) + (4 + 2) = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	56.25	37.5	6.25

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