

Unique Paper Code : 32341501  
Name of the Course : B.Sc. (H) Computer Science  
Name of the Paper : Internet Technologies  
Semester : V  
Year of admission : 2019 and onwards

Duration: Three Hours

Maximum Marks: 75

Attempt any **FOUR** questions.  
Each question carries equal marks.

Q1. Define the purpose of subnet masking. Consider the IP address 165.245.12.88/24, what would be the 32-bit subnet mask? What is the class of this IP address? Give the first IP address and last IP address of the class to which the above IP address belongs. Calculate the following for the above IP address with appropriate explanation:

- Maximum no. of subnets
- Maximum no. of hosts per subnet
- Network Address
- Broadcast address
- First usable IP address for host
- Last usable IP address for host

Q2. How HTTPS is more secure than HTTP?

Which technologies (at the minimum) are needed to create a fully dynamic web page? What is the purpose of AJAX process?

Consider a network scenario, where computer X is connected to a LAN using a NAT router. X wants to send a packet through internet to computer Y which is connected to another LAN and is also using a NAT router. For the above scenario, describe the following concepts with the help of suitable diagram(s):

- Mapping of private and public IP addresses
- Mapping of inside local, inside global, outside local and outside global IP addresses

Which command is used to know the network route between computer X and Y?

Q3. Suppose you are a wildlife photographer, and frequently visits national parks, wildlife and bird sanctuaries. What will you prefer among blog and forum to showcase your knowledge and talent of photography and why? Also, give reasons why the other choice is not suitable? Consider the following array of objects in JavaScript:

Index	Value
0	{name: Jim Corbett National Park, state: Uttrakhand, speciality: Tigers}
1	{name: Kaziranga National Park, state: Assam, speciality: Rhinos}
2	{name: Asola Bhatti Wildlife Sanctuary, state: Delhi, speciality: Birds}
3	{name: Gir National Park, state: Gujarat, speciality: Lions}

Write code for ***parks.html*** which displays the above array of objects as a table. The webpage should also display two text boxes, one for the index and another for the property name along with a submit button. Further, write JavaScript code for ***parks.js***, which will display the value of the property according to the index no. and the property name entered by the user on the browser.

- Q4. Differentiate between anonymous function, function expression and immediately invoked function expression.

Suppose we already have an HTML file with 3 input elements of text type and 1 div type. The value of the **id** attribute of 3 input elements are: *length*, *breadth* and *height* and the value of **id** of div element is: *volume*. Write JavaScript code for the following:

- To access the value of these 3 input elements and div element
- Anonymous function to calculate the volume of the cuboid
- Immediately invoked function expression to display the volume of the cuboid in the html element having id “*volume*”

With the help of an example, differentiate between parameters and arguments of the JavaScript function.

- Q.5 Create an HTML form in a file called ***car.html*** to get the following details of the car:

- Name of the manufacturer
- Name of the model
- Manufacturing Year
- Fuel type (petrol/diesel)
- Color
- Seating capacity
- Cubic capacity

Write JQuery code in a JavaScript file ***car.js*** to get the details of the car from the ***car.html*** on pressing submit button. Also write the JavaScript code in ***car.js*** to make a JavaScript object and JSON object from the above details and print both the JavaScript and JSON object on the console.

Differentiate between innerHTML, textContent and innerText property of the JavaScript.

- Q6. Describe the purpose of the code given below with proper explanation of each statement and method used. Is there any callback function used in the code? If yes, then give the line number(s) where it is being called, and if not then give an example of callback function:

1. `const http = require('http');`
2. `const port = 3000;`
3. `const server = http.createServer(function(req, res){`
4. `res.statusCode = 200;`
5. `res.setHeader('Content-Type', 'text/html');`
6. `res.write("Hello World...");`
7. `res.end();`
8. `});`
9. `server.listen(port, () => {`
10. `console.log('Server is listening on port ' + port);`
11. `});`

Suppose we have a mysql database with the name “*mydb*” having a table named “*customer*”. The fields of the table are: *CustID*, *CustName*, *CustCity*. Write NodeJs commands to connect to the database “*mydb*” and print all the details of customers who are living in Delhi.

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