

Name of Candidate : YASH BHATTDate of Examination : 06/11/234b
1/5Class Roll No. : 21HCS4194Subject : Internet Technologies (IT)

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Course : BSc(H) CS Semester : V

Paper No. : _____ Option : _____

Ans 6) @ To show routing table stored at the computer,

- ① Open Command Prompt (cmd.exe)
- ② Use the command "route PRINT"

Q

(b)

IMAP

- IMAP stands for Internet Message Access Protocol
- IMAP is comparatively advanced and allows user to see all folders on mail server
- IMAP listens on Port 143, and with SSL on 993
- Multiple device access is possible on IMAP.
- Bi-Directional: Changes made on server are visible on device and Vice Versa

U

POP 3

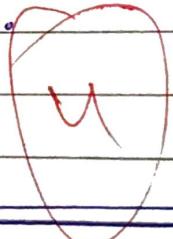
- POP3 stands for Post Office protocol
- Pop3 is a simple protocol, used to download inbox messages to local device
- POP listens on Port 110 and with SSL on 995.
- Only single device access can be done through POP.
- Uni-Directional: Device changes do not affect server content

- Ping command is used to check whether the desired website/destination address is reachable from your device or not.
- Default behaviour of ping (on Windows) is sending 4 32 byte packets one by one to the destination and checking the time taken, success/failure for each of them and giving average time and percentage of successful ping.

traceroute

- Trace route command is used to identify and print each intermediate router hop and respective time to reach from source to destination.

- Default behaviour of traceroute is to increase the TTL of the packet one at a time, and record the last router it reached, then again increase the TTL and repeat till the destination is reached.



b1) a) In PAT or Port Address Translation, private IP addresses are translated into the public IP address via port numbers. PAT also uses IPv4 address but with a port number. It has two types

- ① Static, ② Overloaded PAT.

e.g.

Y

In a private network with multiple devices, say someone's home with smartphone, laptop and TV, PAT makes it possible to connect all of these devices to the internet by sharing a single public IP address and communicating with the internet using unique port numbers for each device. Without PAT, multiple public IP addresses would have been used to achieve this. The destination server on the internet receives the request and responds to the unique port number, allowing the correct device to receive the response.

b) The benefits of Network Address Translation (NAT) are-

(i) Cost Cutting: On using NAT, the organisations don't need to buy a new IP address for all the ~~the~~ systems being used inside the organisation.

(ii) Conservation of Addresses: NAT has also stopped the fast depletion of available IP addresses with the growth of internet using organisations.

To achieve this, a standard IP has been determined to be used inside the organisations, which won't be present anywhere on public networks to prevent ambiguities.

(iii) Easier ISP switching: NATs can also be used to easily change internet service providers, i.e; if an org is dealing with ISP A, but now wants to switch to ISP B, they can connect a new NAT with new entries and then disable communication through ISPA once the NAT table of ISP B is filled.

(iv) Performance & Security Enhancement: Load Balancing, using private addressing, hiding internal address

- NAT aids load balancing by enabling multiple internal devices to share a single public IP address. This allows a router or load balancer to evenly distribute incoming traffic across internal devices, while NAT keeps track of translations between internal and external IP addresses. It can also assist with session persistence, failover, and Port address management.

(3x)

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Ans 3)

① • JQuery selection using >

'>' is a selector used for parent child relationship, i.e., with direct children.
a > b will select the child 'b' who has a parent 'a'

eg. `<div class="parent">
<p> Child 1 </p>
<p> Child 2 </p>
</div>`

3

Since `<p>` tags here are direct children of `<div>`, we can select both of them as `$(".parent > p")`

• JQuery selection using &

'&' is used to select elements that are siblings of another element and share the same parent, where the second element matches the specified selector. eg.

`<div class="parent">
<p> Para 1 </p> <a> A1 Bold 1
<p> Para 2 </p> <a> A2 Bold 2
</div>`

Since 'b' 'a' & 'p' are siblings, inside the div 'parent', to select all **** tags that are siblings of **<a>**, we can write **\$(".parent an**

b) AJAX Calls using JQuery: we can include the jquery library and then **\$.ajax()** to make a request to a JSON API. When the request is successful, we update the page with retrieved data.
eg. ... **<body>**

```
<div id="#result"></div>
<script> $(document).ready(function() { $.ajax({ url: 'example.com', method: 'GET', dataType: 'json', success: function() {
    $('#result').html("<h2>" + data.title + "</h2>"); },
    error: function() {
        if failed $("#" + result).html("An error occurred");
    }
}); }</script>
</body>
</html>
```

Here **\$.ajax()** is used to fetch a title and show it inside a div with "result", or simply display an error occurred if call fails.

Ans 5)

(a) Various Types of records maintained in DNS are:

(i) A Record

Maps a domain name to an IPv4 address

(ii) AAAA Record

Maps a domain name to an IPv6 address

(iii) CNAME Record (Canonical Name)

~~Creates~~ Creates an alias / nickname for another domain name.

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3

(b)

HTTP

- Stands for HyperText Transfer Protocol
- Uses port 80 by default
- Data is transmitted as plain text, i.e., readable at any intercept
- Does not require SSL/TLS certificate
- ~~Uses "http://"~~ uses "http://" url scheme

HTTPs

- Stands for HyperText Transfer Protocol Secure
- Uses port 443 by default
- Data is encrypted and hence unreadable without decryption key
- Requires an SSL/TLS certificate to establish a secure connection issued by a Certificate Authority (CA)
- ~~Uses "https://"~~ uses "https://" url scheme.

3

- Q) A proxy server acts as an intermediary between a user's device and internet. When user requests a webpage or resource, proxy server forwards the request on their behalf. It then retrieves the requested data from the internet and sends it back to the user, hiding user's IP address and enhancing security and privacy.
- Proxy servers can also cache data to improve performance and filter content to block unwanted websites, and can also be used to bypass regional restrictions.

Ans 2) (i) Event Handling in JavaScript :

(i) Inline Event Handlers

e.g.

```
<button onclick="alert('Button Clicked !')">  
    click me  
</button>
```

(ii) Using JS to add Event listeners to elements

```
eg. const button = document.querySelector('button');  
    button.addEventListener('click',  
        function() { alert('Button Clicked');  
    });
```



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4 Pages

C-Sheet.

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(iii) Named function handling
eg. function handleClick() {

```
    alert('Button clicked!');  
    const button = document.querySelector('button');  
    button.addEventListener('click', handleClick);
```

(9)

(iv) Event Delegation

To attach single event listener to a common ancestor to handle events for multiple elements.

eg. <ul id='list'>
 Item 1
 Item 2


```
const myList = document.getElementById('list');  
myList.addEventListener("click",  
function(event){ if(event.target.tagName === 'LI'){  
    alert(`Clicked: ${event.target.textContent}`); } });
```

Lines which item was clicked

(b) Other uses of \$ function are :-

(i) Creating Elements

eg. const newDiv = \$('

');

(ii) Wrapping existing elements with new elements.

eg.

• \$('p').wrap('<div class="wrapper"></div>')

(iii) Event handling

eg.

\$('#button').click(function() { alert("clicked");});

(iv) AJAX operations

eg.

\$ajax({ ... });

③

(v) Data Manipulation

eg.

\$("input").data("user", {name : "John", age : 30});