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Section: 23

Assignment No: 01

SeT: Spring 2025 (A)

Answer of 01:

R3 is moving towards PC1.

Source	Source	Destination
IP	11	1
MAC	H	G1
Port	443 (HTTPS)	49151

Answer of 02:

(i) POST.
The POST method is used to send new data to the server for storage.

(ii) PUT.
The PUT method is used to replace or update an existing Data on the server with new data.

(iii) HEAD.
The Head method only requests the headers of a resource, not the body.

The Head method is similar to GET method. It is used to check if a file or resource exists and retrieve the data without actually downloading the file, and that makes it efficient for existence checks.

Answer of Q3:

The website can use cookies to track user preferences and personalized product recommendations.

Users should be concerned because cookies can collect and share personal information of the user without their consent that leads to privacy invansion and data abuse.

Users can prevent privacy by

(i) clearing cookies regularly
(ii) using private/incognito mode to limit tracking.
(iii) Adjusting browser privacy setting to block third party cookies.
(iv) Using privacy focused extensions on browsers.

Answer of 09:

From a DNS perspective, users face this issue because of DNS caching.

When a user visits a website their browser stores the domain's IP address for a certain period which is defined by the Time to Live value in the DNS record.

If the organization changes the web server's IP address daily, but the cached DNS records on user's devices or ISPs still point to the old IP address, their systems will try to connect to that address. That will be causing connection failures or inconsistent access.

By reducing the TTL value in the DNS setting it ensures faster DNS updates when the IP address changes.

Answer of 05:

The two TCP headers fields should be used here is → URG and PSH.

URG → It indicates that certain data in the TCP segment is urgent and should be processed immediately by passing the normal queue.

PSH → It ensures that data is delivered to the receiving application right away without waiting for the buffer to fill.

Answer of 06:

The access delay is high because the access router is heavily congested as it shows a 91% utilization rate.

When network utilization is very high the router's buffers fill up by causing packets to queue before being forwarded. As more packets wait in line the queueing delay increases.

and leads to longer response times and slower loading of textbooks for students.

Answer of 07:

① Total RTT = (850 − 50) = 800ms

Total object = 23 + 1 = 24

Single RTT = $\frac{800\ ms}{24}$ = 33.33 ms

② Servers speed = 200 mbps

First 5 objects are 6 MB each. So, 5 × 6 = 30mb

Next 19 " " 2 " " . So, 19 × 2 = 38mb

Total Data = 30 + 38 = 68 × 8 = 544 mb

time = $\frac{544}{200}$ = 2.72 sec

= 2720 ms

Answer of 08:

(i) ~~client~~ $ISN_c = 5678$

$ISN_s = 1234$

Data size $c = 546$

Data size $s = 786$

$ACK = 5678 + 1 + 546$

$= 6225$

sequence number $= 1234 + 1 = 1235$

(ii) $RWND_c = 10000$

$RWND_s = 20000$

$ACK - 1 = 10000 - 786 - 256$

$= 8958$

(iii) $ISN_s = 1234$

First data byte $= 1235$

S1 = 786, 1235 ---- (1235 + 786 − 1) = 1235 --- 2020

S2 = 685, 2021 ---- (2021 + 685 − 1) = 2021 --- 2705

S3 = 256, 2706 ---- (2706 + 256 − 1) = 2706 --- 2961

S2 is the earliest unacknowledged segment and has not been acknowledged after retransmission sender window base Sf remains the first byte of S2. So, Sf = 2021.