Study Guide for Application Protocol

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1. Website Protocols

HTTP (Hypertext Transfer Protocol)

- Used to load websites via a web browser.
- Sends web content (HTML, images, etc.) from the web server to your computer.
- **Not secure** — data is transmitted in plaintext.

HTTPS (HTTP Secure)

- Encrypted version of HTTP.
- Uses **TLS (Transport Layer Security)** to protect data.
- Essential for protecting sensitive information online.

Web Languages

- **HTML**: Code used to structure web pages.
- **CSS**: Styles and formats the appearance of web content.

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2. Email Protocols

SMTP (Simple Mail Transfer Protocol)

- Sends email messages from the sender's client to the mail server and between servers.
- Used for **sending only**, not receiving.
- Secure version: **SMTPS**

POP3 (Post Office Protocol v3)

- Downloads emails to a single device and **deletes them from the server**.
- Best for offline access on one device.
- Secure version: **POP3 over TLS**

IMAP (Internet Message Access Protocol)

- Accesses and manages email **on the server**.
- Allows viewing from multiple devices.
- Secure version: **IMAPS**

Webmail Access

- Services like Gmail use **HTTPS** to send/receive mail through a browser.

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3. File Transfer Protocols

FTP (File Transfer Protocol)

- Transfers files between systems.
- **Not secure** — no encryption.

SFTP (SSH File Transfer Protocol)

- Uses **SSH** to encrypt file transfers.
- A more secure and modern alternative to FTP.

FTPS (FTP Secure)

- Adds **TLS/SSL** to FTP for secure file transfers.

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4. Protocol Summary Table

Function	Protocol(s)	Secure Version
Website Access	HTTP	HTTPS
Send Email	SMTP	SMTPS
Receive Email	POP3, IMAP	POP3 over TLS, IMAPS
Webmail Access	HTTPS	HTTPS
File Transfer	FTP	SFTP, FTPS

5. Practice Questions

Q1:

You are helping a user who needs to send sensitive information to a website. What protocol should they use?
A. HTTP
B. FTP
C. **HTTPS**
D. SMTP

Explanation: HTTPS encrypts the connection, protecting sensitive data from interception.

Q2:

You create an email and send it. Before reaching its destination, it passes between several email servers. Which protocol is used?
A. IMAP
B. IMAPS
C. POP3
D. **SMTP**

Explanation: SMTP is used for sending emails between servers.

🔄 6. Reflection Questions

1. Why should we avoid using HTTP on public networks?
2. What are the trade-offs between using POP3 and IMAP?
3. How do secure versions of protocols protect user privacy?
4. Why is understanding protocols important in cybersecurity?