Name:

Section: □ 01—9:00am □ 02—10:00am □ 03—11:00am

1. **[4 points]** Classify each of the Application layer protocols as Client-Server or P2P. And identify the underlying transport layer protocol that each application layer protocol is using. Write your answers in the cells of the table below.

|  |  |  |
| --- | --- | --- |
| Application Layer Protocol | Application Architecture  (Client/Server or P2P) | Underlying Transport Layer Protocol  (TCP or UDP) |
| HTTP |  |  |
| DNS |  |  |
| BitTorrent |  |  |
| SMTP |  |  |

1. **[2 points]** List the four broad classes of transport services that application layer protocols are looking for.
2. **[2 points]** What is the main difference between POP3 and IMAP?
3. **[2 points]** What do we mean when we say that HTTP is sending its control information in-band, and FTP is sending its control information out-of-band?