Question 3

1. The status code is 200, the phrase is "OK".

2. This time is Tue,23,Sep 2003 05:29:00 GMT, yes it contain the Date header. Last modified is when the origin server believes the resource was last modified. The Date header is the date and time the message was sent.

3.
```
Accept-Encoding: gzip, deflate, compress;q=0.9\r\n
Accept-Charset: ISO-8859-1, utf-8;q=0.66, *;q=0.66\r\n
Keep-Alive: 300\r\n
Connection: keep-alive\r\n
\r\n
```
Also, in HTTP/1.1, connections are persistent by default.

4. 73 bytes of content are being returned to the browser.

5. The content is below.
```
    File Data: 73 bytes
∨  Line-based text data: text/html (3 lines)
    <html>\n
    Congratulations.  You've downloaded the file lab2-1.html!\n
    </html>\n
```

Question 4

1. No, it doesn't include "IF-MODIFIED-SINCE" line in the HTTP GET.
2. Yes, the last time that the requested file was modified.
3. Yes, the request contain "IF-MODIFIED-SINCE:" and "IF-NONE-MATCH" lines.
```
        Keep-Alive: 300\r\n
        Connection: keep-alive\r\n
        If-Modified-Since: Tue, 23 Sep 2003 05:35:00 GMT\r\n
        If-None-Match: "1bfef-173-8f4ae900"\r\n
        Cache-Control: max-age=0\r\n
        \r\n
```
Which contain a date of time and a e-tag from "IF-MODIFIED-SINCE:" and "IF-NONE-MATCH" lines. This information used to compare the file modify date record from last time and determine if the server need to catch the new response.

4.
```
HTTP/1.1 304 Not Modified\r\n
>  [Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
```

State code is 304 and phrase is "Not modified". The server doesn't return the file's contents because 304 means the file doesn't been modified so we don't need to resend same content again.

5. The E-tag is `ETag: "1bfef-173-8f4ae900"\r\n`. When the browser requests a resource for the first time, the server returns and returns the words E-tag to the browser. When the browser requests this resource again, the browser will set If-None -Match and transmitted to the server. The server gets the E-tag and compares whether the resource has changed. If the resource has not changed, it will return a 304 HTTP status code without returning the specific resource. It does same with the first response.

Question 5

```
z5378608@LAPTOP-MUMK4F96:/mnt/c/Users/Think/COMP3331$ python3 PingClient.py
ping to 127.0.0.1, seq = 1, time out
ping to 127.0.0.1, seq = 2, time out
ping to 127.0.0.1, seq = 3, rtt = 83 ms
ping to 127.0.0.1, seq = 4, time out
ping to 127.0.0.1, seq = 5, time out
ping to 127.0.0.1, seq = 6, rtt = 28 ms
ping to 127.0.0.1, seq = 7, rtt = 142 ms
ping to 127.0.0.1, seq = 8, rtt = 140 ms
ping to 127.0.0.1, seq = 9, time out
ping to 127.0.0.1, seq = 10, time out
ping to 127.0.0.1, seq = 11, rtt = 197 ms
ping to 127.0.0.1, seq = 12, time out
ping to 127.0.0.1, seq = 13, rtt = 207 ms
ping to 127.0.0.1, seq = 14, rtt = 46 ms
ping to 127.0.0.1, seq = 15, rtt = 61 ms
min rtt: 28, max rtt: 207, average rtt: 113
```