1.

$$O_1 = 150B, \quad O_2 = 100B$$

HTML Base File Size $= 100B$

Time required to get IP address

$$= 4RTT$$

(a.) Total time to transmit the file (HTTP)

$$= 2RTT + 3 \times 2 RTT$$

$$= 8RTT$$

Total time $= (8+4) RTT = 12 RTT$
(including DNS)

(b.) Total time to transmit the file (HTTP)

$$= RTT + RTT(Base file) + RTT(all object)$$

$$= 3RTT$$

Total time $= (4+3) RTT = 7RTT$
(including DNS)