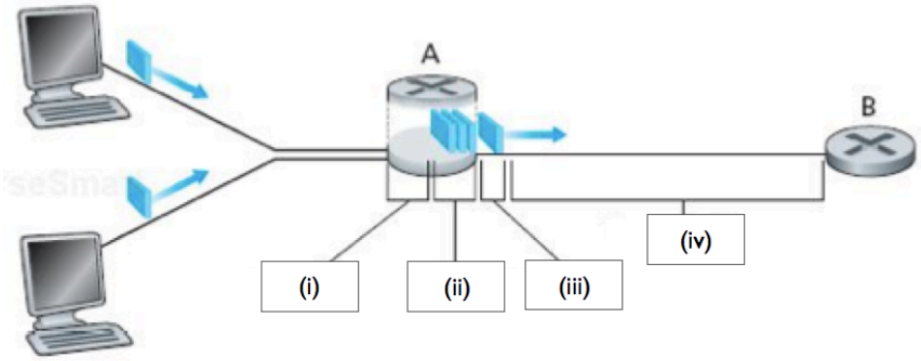
1. (4 points) The figure below depicts the different types of delay that may be experienced in a router. Fill in the type for each letter (i-iv).



i.
ii.
iii.
iv.

2. (10 points) The figures below show a Wireshark excerpt of an HTTP exchange. Use these figures to answer the questions below.

```
Hypertext Transfer Protocol
  GET /~kobus/ HTTP/1.0\r\n
    Host: www.cs.utah.edu\r\n
    User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7; rv:19.0) Gecko/20100101 Firefox/19.0\r\n
    Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
    Accept-Language: en-US,en;q=0.5\r\n
    Cookie: WT_FPC=id=67.182.233.36-2149610080.30274020:lv=1361036985069:ss=1361036985069; __utma=212172294.107
    Connection: keep-alive\r\n
    If-Modified-Since: Wed, 31 Oct 2012 22:06:00 GMT\r\n
    If-None-Match: "13b7066-a82-4cd621ba163d7"\r\n
    Pragma: no-cache\r\n
    \r\n
```

```
Hypertext Transfer Protocol
  HTTP/1.1 304 Not Modified\r\n
    Date: Tue, 05 Mar 2013 19:19:44 GMT\r\n
    Server: Apache\r\n
    Connection: Keep-Alive\r\n
    Keep-Alive: timeout=15, max=100\r\n
    ETag: "13b7066-a82-4cd621ba163d7"\r\n
    Vary: Accept-Encoding\r\n
    \r\n
```

a. What is the HTTP method used in this exchange?

b. What is the name of the web server?

c. What browser was used?

d. What was the absolute URL requested?

e. What was the relative URL?

f. What version of HTTP was used in the request?

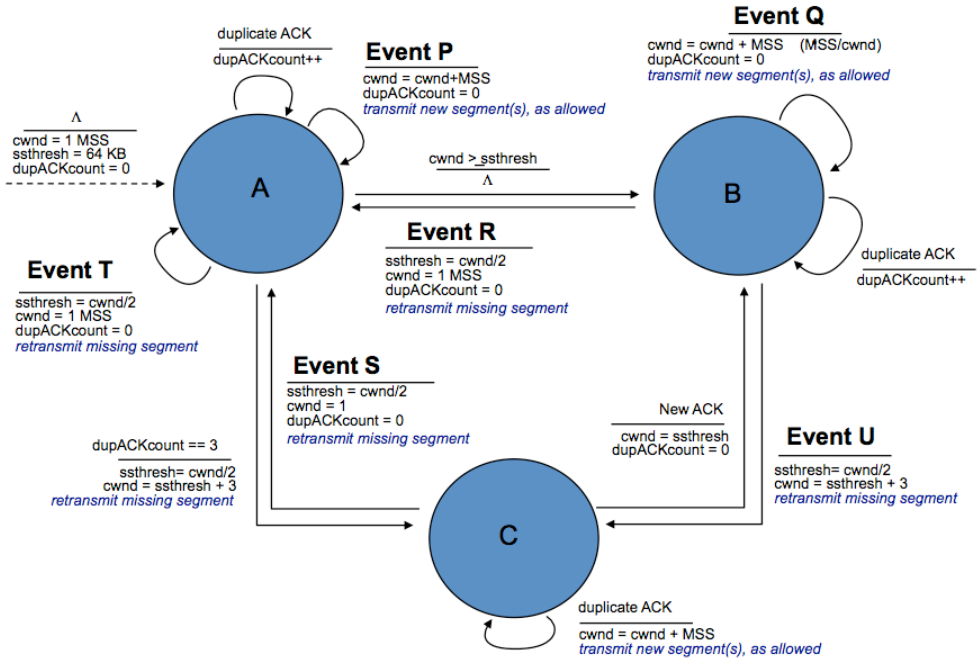
g. What version of HTTP was used in the response?

h. What is the status code of the response?

i. Does the response code indicate a successful or a non-successful response? Explain your answer.

j. Some websites maintain separately formatted pages for mobile devices. Explain how a website might "know" which version of content to serve to a requesting browser.

3. Consider the TCP congestion control FSM below.



a. (1 point) What is phase A?

b. (1 point) What is phase B?

c. (1 point) What is phase C?

d. (1 point) What is event P?

e. (1 point) What is event Q?

f. (1 point) What is event R?

g. (1 point) What is event S?

h. (1 point) What is event T?

i. (1 point) What is event U?

4. (1 point) Explain why a transport protocol might need to provide flow control.