5. Application architecture and intrastructure strategy can have serious implications on the performance of Web Applications.

   (a) The Domain Name System (DNS) is an essential component of the Internet.

      i. Explain how the domain www.wikipedia.com is resolved. [4]

      ii. To prevent overloading of the system, various DNS caches exist. Describe which caches may be used when looking up a domain. [4]

      iii. How does the time-to-live (TTL) affect caching of DNS entries? [2]

   (b) Define the terms **response time** and **perceived response time**. [2]

   (c) Asynchronous JavaScript and XML (AJAX) techniques can improve the perceived response time of an application. Explain how this works with the aid of an example. [4]

   (d) Sketch a graph of throughput against concurrent requests, and describe the distinct regions. [3]

   (e) Scaling out and scaling up are two strategies for increasing the service capacity of web applications. Define each of these terms, and give advantages and disadvantages of each. [6]