



EASTERN UNIVERSITY, SRILANKA

THIRD EXAMINATION IN SCIENCE - 2004/2005

Repeat

FIRST SEMESTER (Jan./Feb.,2006)

CS303 – Internet and Multimedia Applications

Answer all questions

Time: 2Hours

Q1.

(a)

- i) List and explain all the components of IPV6 (Internet Protocol Version 6) packet.
- ii) List the field appearing in the IPV4 datagram that are no longer present in the IPV6 datagram and give reasons why they are avoided in the IPV6 datagram.
- iii) Briefly describe the '**Tunneling approach**', which is used to integrate IPV6 hosts into IPV4 world.

(b)

- i) Describe the IP addressing procedure.
- ii) Suppose an Internet Service Provider (ISP) may itself have been allocated the address block 200.21.48.0/20. The ISP, in turn could divide its address block into eight smaller address blocks of equal size and give each address block to eight organizations named Org-1, Org-2, Org-3 up to Org-8 that are supported by this ISP.
Identify the address blocks, which are allocated to each organization.

Q2.

- (a) Explain how a web-cache satisfies an HTTP request on the behalf of a client.
- (b) Describe LAN address and Address Resolution Protocol (ARP).
- (c)
 - i) Describe the services provided by Domain Name Systems (DNS).
 - ii) Suppose the host *suresh.eurocom.us* desires the IP address of *naresh.cs.esn.edu*. Also suppose that local name server for *suresh.eurocom.us* is *dns.eurocom.us* and that an authoritative name server for *naresh.cs.esn.edu* is *dns.esn.edu*. Explain how the host *suresh.eurocom.us* can get the IP address of *naresh.cs.esn.edu*

Q3.

(a) Briefly describe each of the following components of an e-mail system:

- User Agent
- Mail Server
- SMTP
- POP3

(b) Describe briefly the **browser – based e-mail** system.

(c) State the use of the following tags in XHTML:

- `<a>`
- `<base>`
- `<frame>`
- `<link>`

(d) Describe how multimedia can be applied in education and training. Discuss the advantages and disadvantages over more conventional methods when it is applied in this area.

(e) The **Lempel-Ziv-Welch (LZW)** compression algorithm replaces string of characters with single code. Give the LZW compression algorithm in its simplest form.
Run the LZW compression algorithm for the string **/WED /WE /WEE /WEB /WET**, creating the corresponding compression table.

Q4.

(a) Define the term **Socket** in connection with process communication across a network.

(b) Describe the purpose of the class **Socket** and **ServerSocket** defined in the Java package `java.net` and outline how it can be used.

(c) Consider the following client/server application scenario for TCP protocol:

- *A client reads a line from its standard input (keyboard) and sends the line out its socket to the server.*
- *The server reads a line from its connection socket.*
- *The server converts the line to uppercase.*
- *The server sends the modified line out its connection socket to the client.*
- *The client reads the modified line from its socket and prints the line on its standard output (monitor).*

Write client/server Java program pair for a TCP implementation of the above application. The client program is named as **TCPClient.java** and the server program is named as **TCPServer.java**. The user at the client may then use the application to send a line and then receive a capitalized version of the line.