Digital Communication I

(a) For each of these examples of addressing, state whether it is flat or hierarchical and why:

(i) postal;
(ii) telephone;
(iii) Ethernet (MAC) address;
(iv) Internet (IP) address.

(b) Compare class-based and classless addresses as used in the Internet.

(c) Why were classless addresses introduced?

(d) Consider a router of IP packets.

(i) What information must be held in a routing-table when classless addresses are used?

(ii) Describe Longest-Prefix Match, providing an example of its use.

(iii) Describe the process of routing-table lookup that leads to the default-route being used and comment on the circumstance in which an IP router does not have a default-route.

(e) Considering your answers to part (d), describe two challenges for router-vendors following the introduction of classless addressing.