

### Extra Problem Set

6CCS3INS

TCP, IP, and Internet Architecture

**P1:** Assume the network 192.168.255.0, with a netmask of the form 255.255.255.192.

- i) How many sub-networks are possible?
- ii) With how many hosts in each sub-network?
- iii) Write the range of IP addresses of the different sub-networks.

**P2:** The network number 193.1.1.0/26 has been assigned to an organisation, who wants to have 3 subnets while the largest subnet need to support up 12 hosts.

- i) What is the extended network prefix?
- ii) How many bits does it have?
- iii) Write the first and last IP addresses of any of the three subnets.

**P3:** Suppose that a TCP message that contains 2048 Bytes of data and 20 Bytes of TCP header is passed to IP layer for delivery across two networks on the Internet. The first network has an MTU of 1024 Bytes; the second has an MTU of 512 Bytes.

- i) Give the **sizes** and **offsets** of the sequence of fragments delivered to the network layer at the destination host.

Assume all IP headers are 20 Bytes.