Question 1

An 8086 system is to have 32KB of 16Kx8 RAM chips for read/write memory, starting at location $80000, and 16KB of 8Kx8 ROM memory chips for program storage starting at location $FC000. The RAM chip has RD/ WE/ & CE/ inputs and the ROM has an active high (i.e. not complemented) Chip Enable (CE) input.

i  What is the address range for the RAM and the ROM, in Hex?
ii  How many address pins does the ROM have? And the RAM?
iii  How many data pins does the ROM have? How about the RAM?
iv  Which memory address pins connect to which µP address bus lines?
v  To what do the memory data pins connect?
vi  Draw the memory map assuming there are no other memory chips in the system.
vii  Design the address decoding logic for both types of memory.

Question 2

A 80386 is to have 32K of ROM that can reach $FFFFFF, and 32K of RAM at $00000.

The RAM and ROM chips are identical to those used in questions 1 to 2 above.

Obtain the memory map and design the complete memory system.