Practice Set 1:

- 1. a. How many 128×8 RAM chips are required to provide a memory capacity of 2048 Bytes? You can assume the size of one memory location is 1 Byte.
 - b. How many lines of the address bus must be used to access 2048 Bytes of memory? How many of these lines will be common to all chips?
 - c. How many lines must be decoded for chip select? Specify the size of the decoders.

1. a.	Memory capacity 2048 bytes. one RAM chip size 128 X8
Non A	so Regd. no. of RAM chip = 2048 = 16 chips.
ь.	2048 = 2" : 11 address bus lines should be used to access 2048 bytes.
	used to access 2048 bytes.
	so 7 address lines will be common to each chips.
	2 / (- 6 /6 / 4 / 4 / 2 / 2 / 2 / 4 / 4 / 4 / 4 / 4
c.	total no. of lines of address bus \$ 11.
	common no to and all the chips 7.
	so 4 lines must be decoded for chip select
	there are 16 chips.
	so 4×16 decodet needs to be used.

- 2. A type of Minicomputer has 18 address signals and of course, the 18-bit address bus. Answer the following questions:
 - a) What was the address space of these computers?
 - b) What may have been the largest possible memory of these computers in bytes if the memory location is 1 Byte?
 - c) What would be needed to change in these computers if we would like to increase address space 8-times?

Solution:

c) add 3 address signals towards the higher order bits. (x / $2^{18} = 8 \Rightarrow x = 2^{18} \cdot 2^3 = 2^{21}$)