## **Practice Set 1:**

- 1. a. How many  $128 \times 8$  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	Memory capacity 2048 bytes.  one RAM chip size $12.8 \times 8$ So Regd. no. of RAM chip = $\frac{2048}{128} = 16$ thips.
пов.	2048 = 2" : 11 address bus lines should be used to access 2048 bytes.
	so 7 address lines will be common to each chips.
c.	total no. of lines of address bus \$ 11.  common no. to ad all the chips 7.
	so 4 lines must be decoded for chip select there are 16 chips. so 4 x 16 decoder 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 /  $2^{18} = 8 \Rightarrow x = 2^{18} \cdot 2^3 = 2^{21}$ )