

GATE 2016, SET I, 1 Mark

A processor can support a maximum of 4GB, where the memory is word-addressable (a word consists of two bytes). The size of address bus of the processor is at least _____ bits.

Sol.

First we will convert 4GB in to Bytes

$$4GB = 2^{30} \times 4 = 2^{30} \times 2^2 = 2^{32} \text{ Bytes}$$

Given in problem, a word consist 2 Bytes,

$$\text{So, no of words} = 2^{32} / 2 = 2^{31}$$

The size of address bus of the processor is at least 31 bits.

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