18004120

Ans. to Q.no. 1

i) **Clock cycle:** The time between a high and low state of the CPU clock is called a clock cycle. The CPU clock cycle generator is an oscillator which generates pulses and a single pulse is a clock cycle. For example - a 5MHz CPU oscillates a 5×10^6 times, a second, So, it's clock cycle is 200ns.

ii) **Bus cycle:-** A bus cycle or a machine cycle is the most basic microprocessor operation. It can be reading or writing from/to memory. It is composed of at least 4 clock cycles. For example - a read operation from memory.

iii) **Instruction cycle** - An instruction cycle consts of multiple machine cycles. It is the total time required by cpu to complete an instruction.

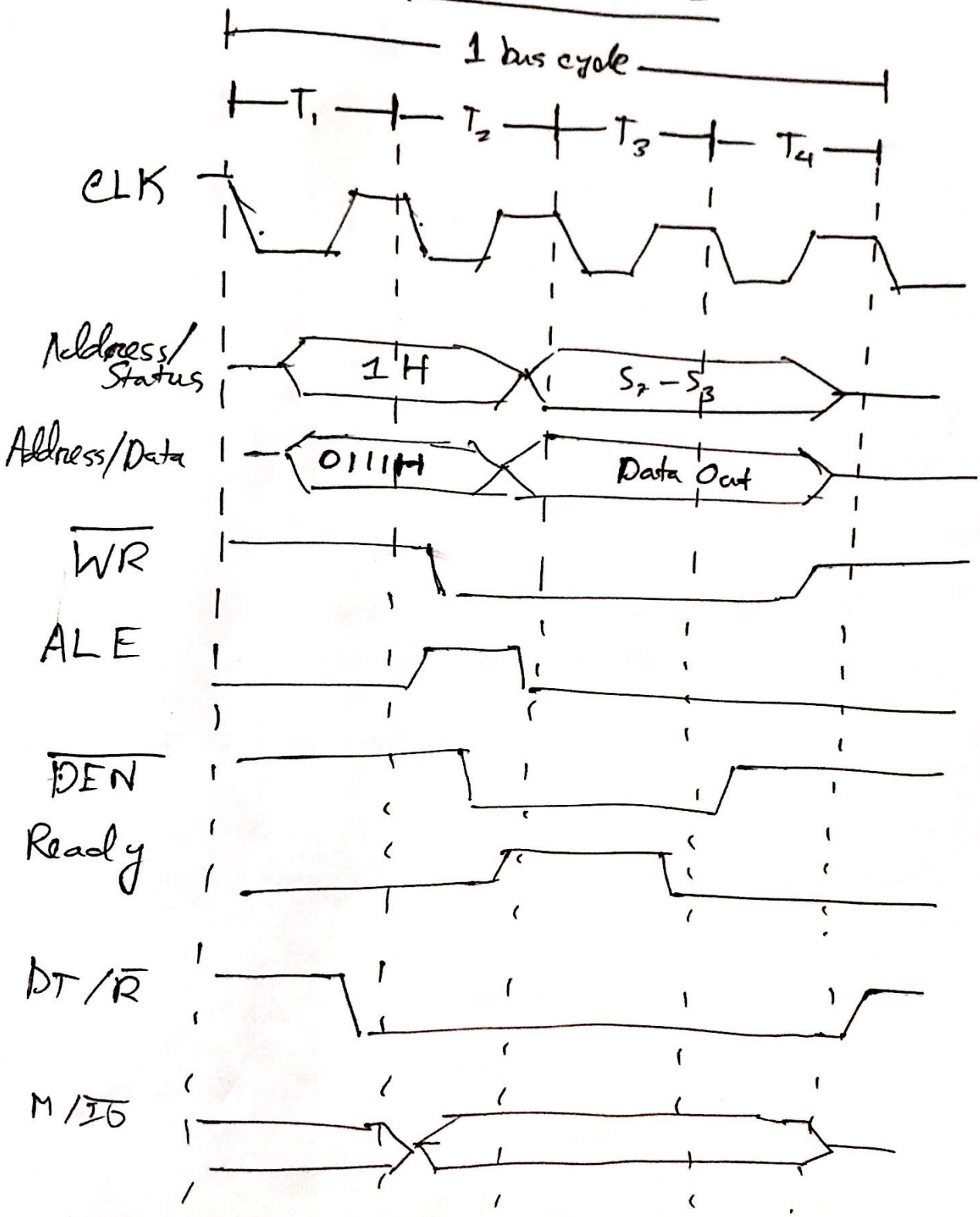
Ex - A MOV operation has 1 instruction cycle.

iv) **Machine cycle:** A bus cycle is same as a machine cycle. Ex - A read or write operation from memory.

v) The T duration for 40 MHz is

$$T = \frac{1}{40 \times 10^6} = 25 \text{ ns}$$ (Ans.)

Ans. to Q.no. 2


1 bus cycle
T1
T2
T3
T4
CLK
Address/ Status
1H
S7 – S3
Address/Data
0111H
Data Out
WR
ALE
DEN
Ready
DT/R
M/IO