

Assignment: 1 (304)^{CP}

1) IF $EA(\text{offset}) = 0124H$ and $DS = 7000H$, what will be the physical address generated by 8086?

$$\begin{aligned}\text{Physical Address} &= \text{Segment} \times 16 + \text{offset} \\ &= 70000 + 0124 \\ &= 70124\end{aligned}$$

2) What are the advantages of segmentation in 8086?

- Allow the memory capacity to be 1 megabyte even though address associated with the individual instructions are only 16 bit wide
- Allow the instruction data on stack portion of program to be more than 64 kbytes long by using more than one code, data on stack segment
- Facilitate the use of separate memory areas for a program, its data and the stack. This feature provide protection.
- Permit a program and on its data to be put into different areas of memory each time the program is executed helps in multiprogramming. This help in achieving relocatability.

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3.) Explain pipelining structure of 8086.

→ Pipelining has become possible due to the use of Queue.

- BIU fills in the queue until entire queue is full.
- The execution unit always reads the next instruction byte from the queue in BIU. This is faster than sending out an address to the memory and waiting for the next instruction byte to come.
- In short pipelining eliminates the waiting time of EU and speeds up the processing. The 8086 BIU will not initiate a fetch unless and until there are two empty bytes in its queue.

4.) How IP, BX, BP, SP helps in producing physical address?

→ IP, BX, BP and SP holds offset address.

In CS, DS, SS we have segment address.

Using segment and offset address we can generate physical address.

5.) Briefly explain the consequences if BHE pin is not there in 8086?

→ If BHE pin is not there in 8086 then odd bank and even bank concept not work.

Using BHE we have two choices for taking data which are byte and word.

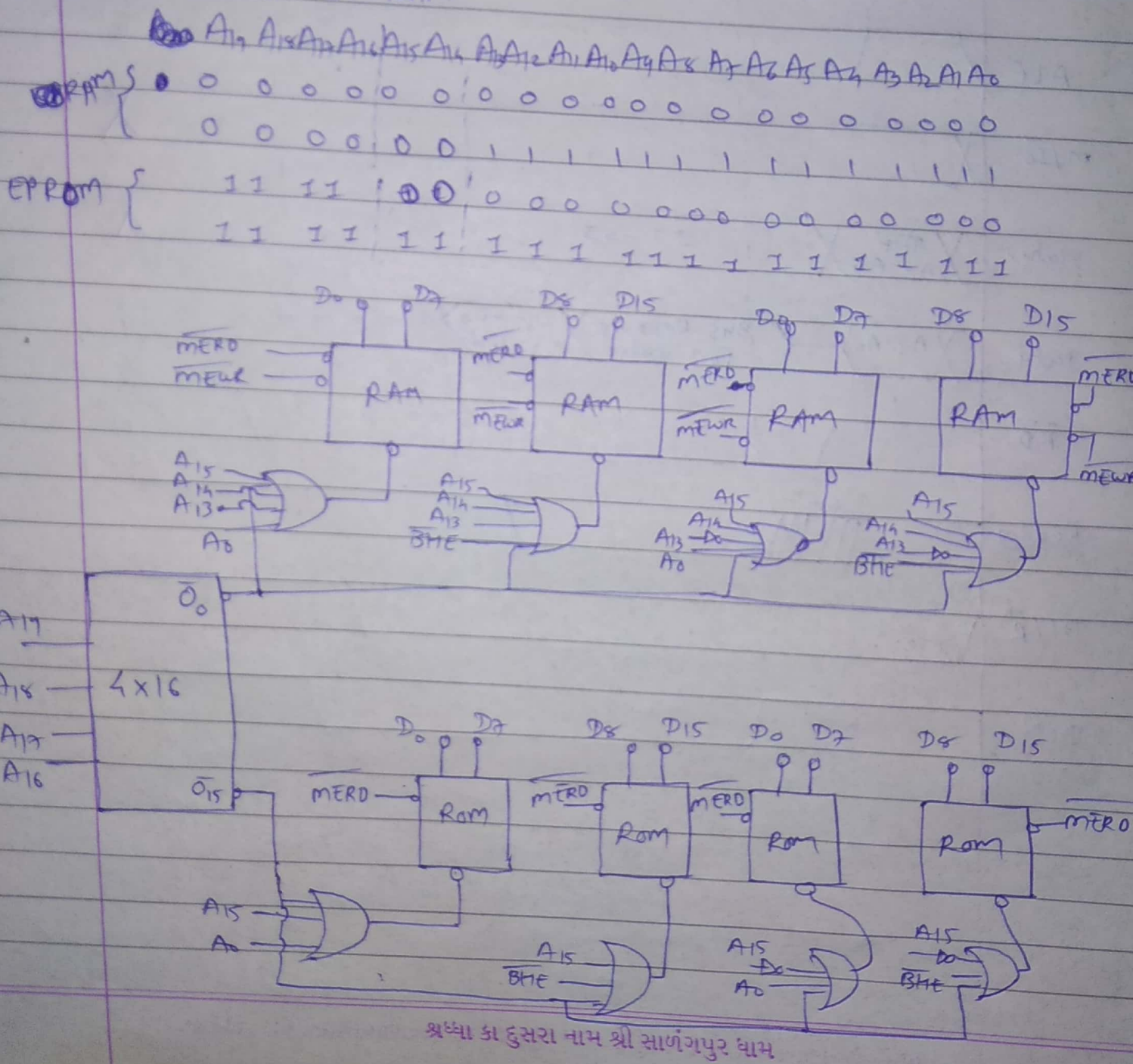
When BHE and $\overline{A0}$ is low we get word in other case we get byte.

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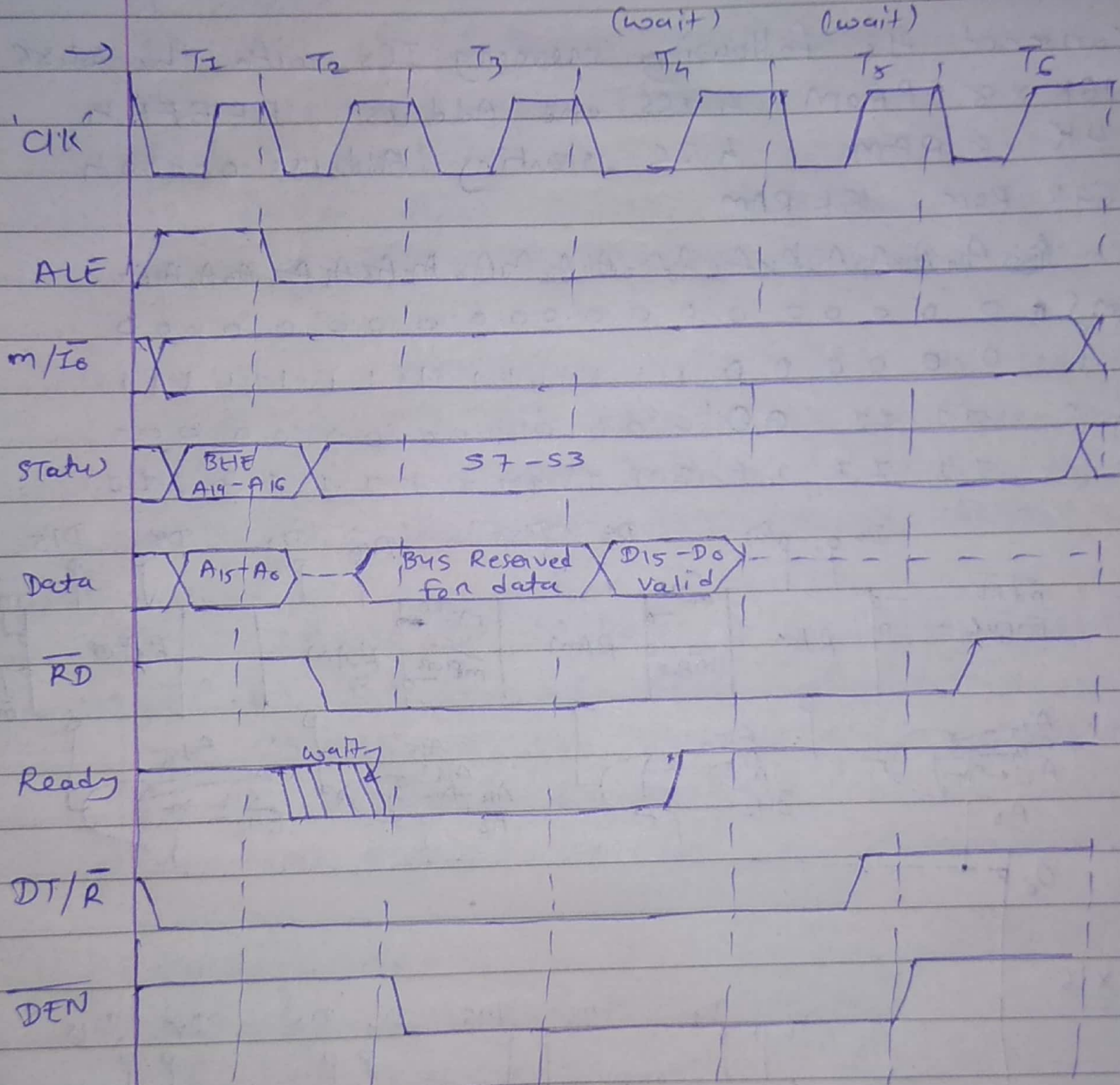
If we remove BHE then every time either byte or word we get.

- 6.) Connect the following memory ICs with the 8086
- 16K x 8 EPROM 4 ICs end Address FFFFFH
 - 4K x 8 RAM 4 ICs starting Address 00000H
 - 64K Rom, 16K RAM



श्रद्धा का दुसरा नाम श्री साणंगपुर धाम

7.) Draw timing diagram of minimum mode memory read machine cycle with two wait states.



MBP Patel

પ્રભુનું ભજન ખુબ કરો એ જ સાચું છે. - ગુરુવર્ય શ્રી અધ્યાત્માવાળાસ્વામી - વડતાલ.