

memory and the microprocessor.

2) It also carries instructions from memory to the microprocessor.

3) Size of the bus, therefore limits the number of possible instructions to 256, each specified by a separate number

3. CONTROL Bus :

1) It has various lines which have specific functions for coordinating and controlling the microprocessor operations. Eg - read / not write line, single binary digit.

2) It carries control signals partially unidirectional, partly bidirectional and control signals are things like "read or write".

3) These tells memory that the microprocessor is reading data from a location, specified on the address bus or writing to a location specified on the address bus.

* DEMULTIPLEXING of 8085 :

1) In 8085 microprocessor the higher order address lines i.e. $A_8 - A_{15}$ are directly available, but the lower order address lines are multiplexed with data bus in time sharing.



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C(4)	P(4)	A(2)	Total (10)	Sign.

2) Hence, the demultiplexing of address / data bus is required i.e. separating of address and data bus.

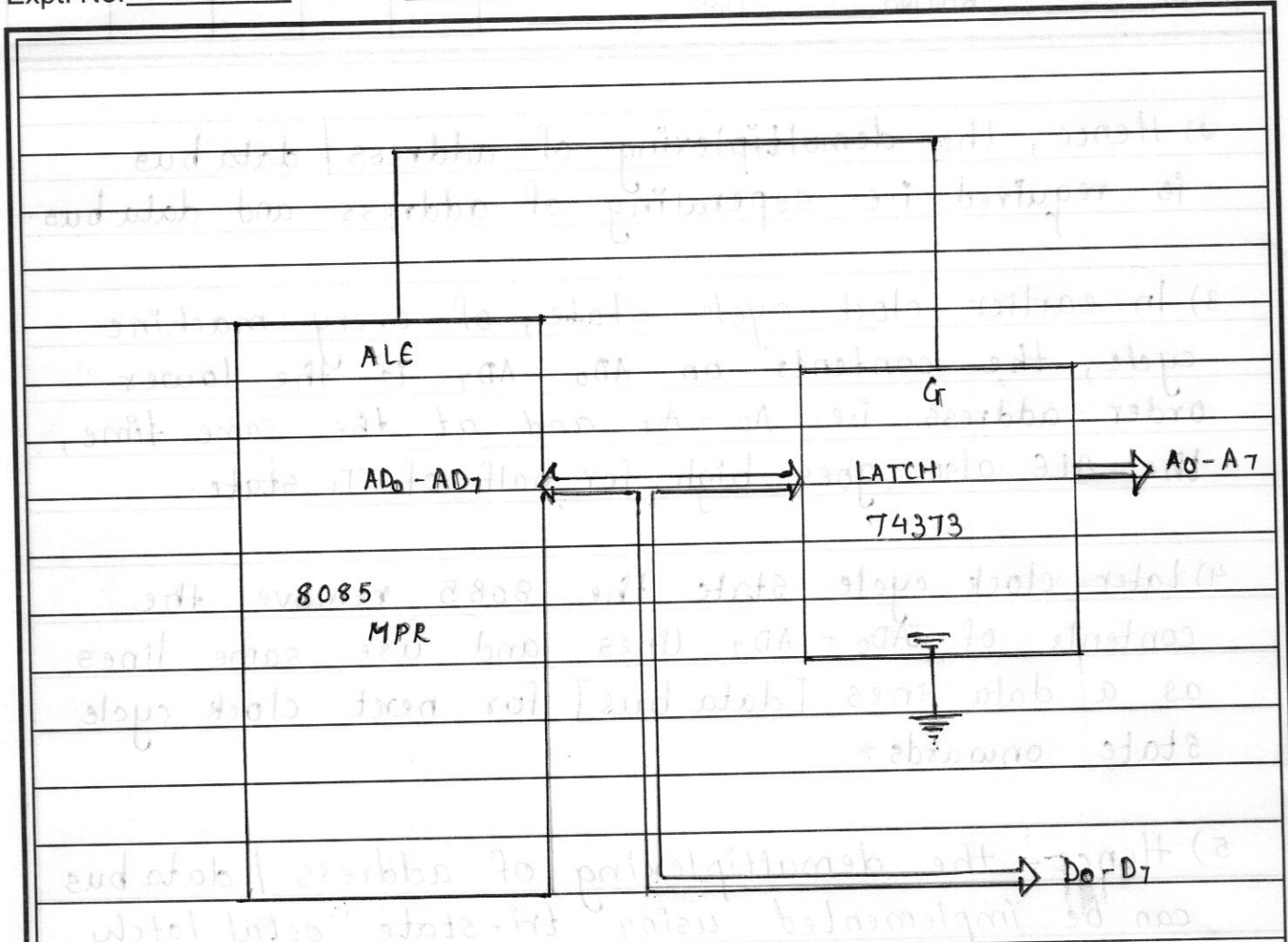
3) In earlier clock cycle state, of every machine cycle, the contents on $AD_0 - AD_7$ is the lower order address i.e. $A_0 - A_7$ and at the same time, the ALE also goes high for half of T_1 state.

4) Later clock cycle state the 8085 remove the contents of $AD_0 - AD_7$ lines and use same lines as a data lines [data bus] for next clock cycle state onwards.

5) Hence, the demultiplexing of address / data bus can be implemented using tri-state octal latch 74LS373 and this latch can be controlled by using ALE signal of 8085.

6) When ALE goes high, the address signals will be latched in the octal latch 74LS373 and the output of the latch will be provided on $A_0 - A_7$.

7) When ALE goes low, the latch will be disabled and $AD_0 - AD_7$ can be used as data bus $D_0 - D_7$.



Diag : DEMULTIPLEXING of AD₀ - AD₇.

* LIMITATIONS of 8-bit MICROPROCESSOR :

- 1) The word length is of 8-bit hence processing speed is slow.
- 2) Due to 16-bit address bus line, we can address only upto 64 Kbytes of memory.
- 3) 8-bit microprocessor has multiplexed data bus and address, so extra hardware is required to ~~st~~ seperate address signal.



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C(4)	P(4)	A(2)	Total (10)	Sign.

4) It can read one instruction at a time, unless first instruction gets executed completely, MPR cannot read second instruction from memory as it has only one instruction register.

5) Operating speed is less so speed of execution is less.

6) Using 8-bit microprocessor we cannot design multi-processor system.

7) Due to limited size of all registers we can store limited data bytes in microprocessor memory.

8) There is no memory management system.

9) It is used only for control application.

10) It is not used in workstations and servers.

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1) It can read and execute a program from memory. It has only one instruction register and it has only one instruction pointer.

2) Operating speed is less.

3) Being 8-bit microprocessors are compact design.

4) Due to limited size of all registers we can store limited data bytes in microprocessors memory.

5) There is no memory management system.

6) It is used only for control application.

7) It is not used in workstations and servers.