

* Theory of Computation (TOC) - Assignment Number - 6

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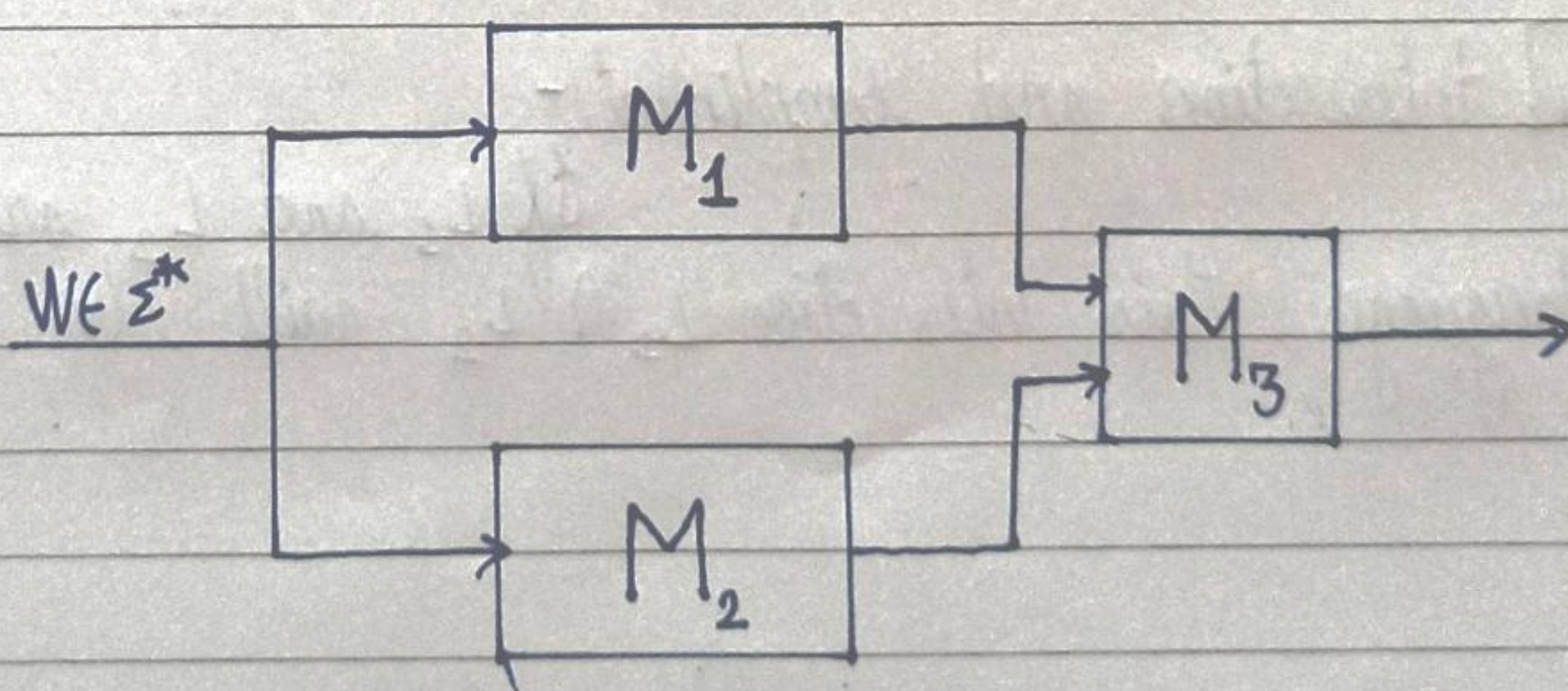
Batch:- T-2

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★ Design Recursive Language machine if L is defined as W is in L_1 and not in L_2 and W is in L_1 and not in L_2 .

→ Let the Turing machine M_1 decide L_1 and M_2 decide L_2 . If word $W \in L_1$, then M_1 returns Y else it returns N . Similarly, if a word $W \in L_2$ then M_2 return Y else it return N .



★ Do a case study on recursive language.

→ A recursive language (subset of RE) can be decide by Turing machine which means it will enter into final state for the strings which are not part of language. Recursive Languages are also

known as Turing decidable Languages.

* Closure Properties of Recursive Languages -

1] Union -

If L_1 and L_2 are two recursive languages their union $L_1 \cup L_2$ will also be recursive because if TM halts for L_1 and halts for L_2 , it will also halt for $L_1 \cup L_2$.

2] Concatenation -

If L_1 and L_2 are two recursive languages, their concatenation $L_1 L_2$ will also be recursive.

3] Kleene Closure -

If L_1 is recursive, its Kleene closure L_1^* will also be recursive.

4] Intersection and Complement -

If L_1 and L_2 are two recursive languages, their intersection $L_1 \cap L_2$ will also be recursive.