(1) Let $L$ be the language of strings that represent non-negative even numbers in base 5 without leading 0’s, i.e., $L \subseteq \Sigma_{\text{Five}}^* = \{0, 1, 2, 3, 4\}^*$, 
$$L = \{0, 2, 4, 11, 13, 20, 22, \ldots \}$$
(for example, 123 in base 5 refers to $1 \times 5^2 + 2 \times 5^1 + 3 \times 5^0$, which in base 10 is 38, which is even; hence $123 \in L$).

(a) Describe an algorithm to determine which strings are in $L$: your description should be brief and not involve DFA’s. Explain why your algorithm works.

(b) Give the formal description of a DFA that recognizes $L$ based on the algorithm in part (a), and briefly explain why your DFA implements this algorithm.